

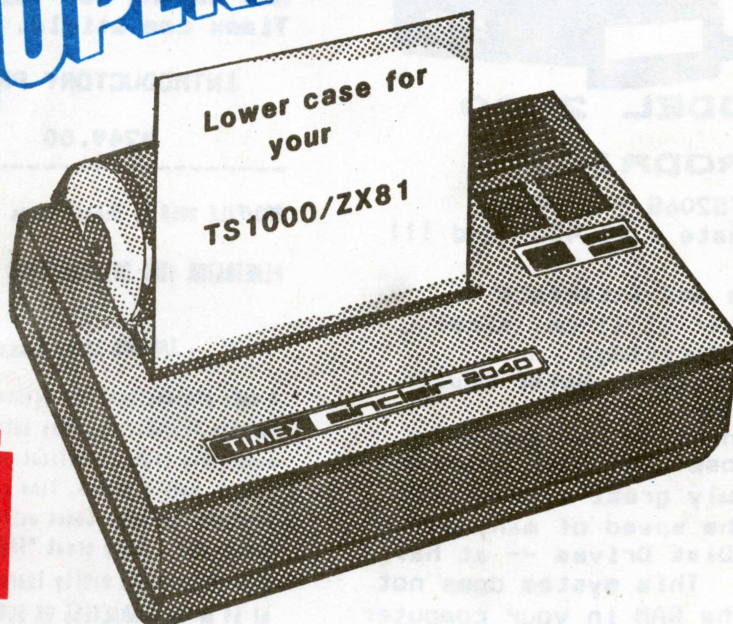
Jan.

No. 11

\$2.00

T-S Horizons

SUPERPRINTER



BAR GRAPHS

T-S 2068 Word Processors
COMPARITIVE EVALUATION

Reviews:

ASTRONOMY ON YOUR T-S 1000
A&JMODEL 2000
EDUCATIONAL SOFTWARE
MASTERFILE

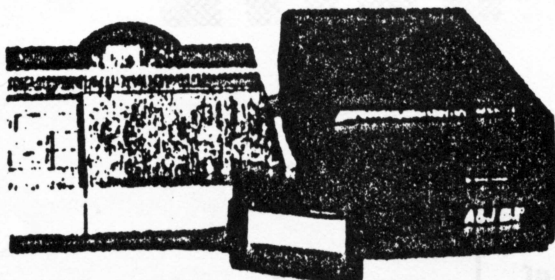
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in dot matrix printing using
NEW SQUARE DOT TECHNOLOGY.
Timex compatible. I/F req.

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PENETRATOR (THE ORIGINAL FROM TIME1) - - - \$ 17.95

TASHORD II by Tashan Software

A very professional and economical 2068 word processor
for the TS2068. Features automatic wordwrap, de-
selectable right justification, block move, copy,
insert, help displays, line centering, re-formatting,
find and replace. Comes with a very nicely written
manual and a truly great "TASHORD TUTOR" on the
tape to help you easily learn TASHORD II. Your choice
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2040 printer or AERCO or TASHAN I/F. ***) ***) \$48.95

TS2068 SOFTWARE ON CARTRIDGE

ANDROIDS - \$ 19.95
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FLIGHT SIMULATOR - \$ 21.95

TS2068 CASSETTE SOFTWARE

STOCK MARKET SIMULATOR
(finally avail.) \$ 17.95

T-S Horizons

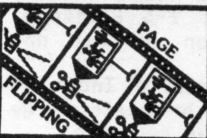
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#1 Nov'83 Creating/Saving Files (Johnson), Repeat Key and Uninterruptible Power Supply Projects, Numerical Analysis, Load/Save Problems, Reviews, and more!



#2 Dec'83 Matrix/Cursor Input (Johnson), User-Friendliness, Reset Switch Project, Memory Reduction, Rule of 78, ZX Cash Register, Graphics Tutorial, etc!



#3 Jan/Feb'84 Two Animation Programs, Simple Loading Aid Proj. (Young), Tape File Protection, Differential Equations, Ham Radio Reviews, User Group News & More!

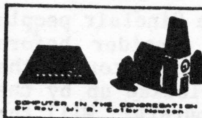


#4 March '84 The Death of TCC, TS1000 Bank Switching (Hunter), Error Recovery (Johnson), Edge Connector Schem., Simpson Rule, Reviews, Reader Input, & more!



#5 April/May'84 "WORM" Word Processor (Young) Pt.1, Least Squares, TS1000 Graphics Program, TS2068 Future?, Bank Switching Pt. 2, Program Tips, Reviews, and more!

BACK ISSUES



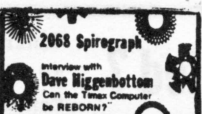
#6 June'84 Ts1000 As Church Aid, Interfacing Books, Num. Analysis, Hardware Tips, "WORM"-2, Switching-3, Good News from EA Brown, Six Reviews, and more!



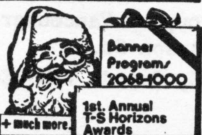
#7 July/Aug'84 Telecommunications Issue, 2068 Program Tips, How A Compiler Works, Rotating Globe, Byte-Back Modem, TC for Beginner, Switching-4, WORM-3, S.I.N., etc.



#8 Sept'84 TS 1000 Music Program, 2068 Plotter, 2068 Character Set (Young), Address Program, Nine Reviews, Telecommunications Column, TS News, and more!



#9 Oct/Nov '84 - ANNIVERSARY ISSUE, TS 2068 Spirograph, Dave Higgenbottom interview, FORTH for T/S Computers, Spectrum section, Bank Switching-5, Telecommunications, Reviews, etc.



#10 Dec '84 - 40 PAGES, Making Backups of 2068 Software, Banner Programs, QL, TS1000 Program Tips, Christmas program, RS100vs.TS1000, MTermII, Horizon Awards, Switching-6, TSUGs, New Column, more!

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ENTER

It seems as if we just finished issue 10 and now we're already running late with issue 11. One of the longtime friends of T-S Horizons has been Jules Gesang of the CATS (D.C. area) user group and Gesang Associates. We recently learned that Jules is in the hospital recovering from a heart attack that occurred shortly after New Years. The good news is that he is recovering rapidly. Cards can be sent to Box 452, Randallstown, MD 21133. You're in our prayers, Jules.

Spectral Rumors

The Sinclair QL and the new Spectrum Plus were featured recently at the Consumer Electronics Show in Las Vegas in early January. This fact and the rumor that Sinclair has received FCC approval for these machines have fueled speculation that the Spectrum Plus (an improved 48K Spectrum-see TS News) will be released soon in the U.S. Sinclair has denied any plans to do so.

We must keep in mind that the Sinclair people have a lot of factors to consider before making such a move. The first factor is the U.S. market. Is the market locked up by the currently available home computers? Will the expected flood of Japanese MSX computers (fall 1985) send the U.S. market into chaos? TI, Mattel, Coleco, and Timex are out of contention and Atari is still floating in red ink.

Secondly the Sinclair machines themselves are a consideration. Will selling the QL hurt the chances of the Spectrum? Or vice versa? Can either machine sell without disk drives? How low can they come down in price to

compete with Commodore, Atari, and Tandy? Some people say the QL and the Spectrum Plus both need to be improved to be popular here.

Finally there is the still painful association with Timex. Sinclair is still living down the Timex bail-out, which of course was not Sinclair's fault. They still receive a lot of calls and letters from disgruntled TS1000, 1500, and 2068 owners.

But if they do decide to take the risk there would be enormous benefits for us American users. Few of us realize just how popular the Spectrum is in England. An incredible number of British peripheral and software makers are eagerly awaiting the great leap across the Atlantic. With the availability of Spectrum emulators, 2068 owners would be set. Also TS1000 owners would benefit by the increased Sinclair presense.

Other Matters of Interest

- Dave Higgenbottom is still trying to secure financing and Timex is being patient. We hope to know the outcome one way or the other soon.

- Last we heard on BASIC was that the publication would be cancelled and all paid subscriptions would be fulfilled by another company. We haven't verified this yet. If so we extend our sympathy to the former subscribers and reserve our comments for a future issue.

- As may be mentioned elsewhere in this issue, several people have confused the Scott Duncan of Ramex with our own Scott Duncan, circulation manager, etc. of T-S Horizons. They are not the same person and are not related to each other.

- We hope you find this issue's Index to Volume I of T-S Horizons to be useful. We tried to make it as complete as possible.

Is your group listed?

USER GROUPS

T/S Users Group of Vancouver
#108-1205 Johnson St.
Coquitlam, BC, Canada V3B 6E6
John Brohman

Ft. Worth Timex User Group
406-8300 Calmont
Ft. Worth, Texas 76116
Tim Ward

PORTS User Group
(Portsmouth Ohio Region Timex-Sinclair)
2002 Summit Street
Portsmouth, Ohio 45662

TSUG-Mile High Chapter
914 S. Victor Way
Aurora, CO 80012
Jeff Brothers

Central Pennsylvania T.S.U.G.
RD. 1, Box 539
Centre Hall, Pennsylvania 16828

Victoria Sync Association
942 Cloverdale Avenue
Victoria, BC, Canada V8X 2T6

TAS BAM User Group
P.O. Box 644
Safety Harbor, Florida 33572
Will Becker, Mel Nathanson

Dallas Timex User Group
2624 East Park Blvd.
Plano, Texas 75074
Julie Barrett

T.S.U.G. Cincinnati
11 Funston Lane
Cincinnati, Ohio 45218
Rick Johnson

You Can Depend On Us

I suspect that if we stopped publishing T-S Horizons some of our readers would be devastated - as much as by the demise of Syne and Timex. Our readers have put a lot of faith in us, and we have no intention of betraying that faith. If you have a 12-issue subscription to TSH and it started with issue 11 you can count on receiving issue 22 as well.

Does that sound like a pitch for subscription renewals? It's not meant to be. It's just our way of saying count on us. You have supported us and we plan to earn that support in every issue.

Yours Sincerely, Rick Duncan

FROM THE CLUTTERED DESK

Reader input plus other notes of interest

By Scott Duncan
Advertising/Circulation Manager

Hello and welcome to 1985 and another big year for T-S Horizons. We have many plans for the magazine this year and would greatly appreciate your ideas and suggestions. We do read your letters and as some of you can tell we also use your ideas.

Let me take care of some business before we jump into your letters.

First of all let me say that I have no connection with Ramex nor does their Mr. Scott Duncan have any connection with T-S Horizons. Some of you have been asking about this.

We recently ran out of back issue No. 3 and have since had reprints made. If you ordered and received one of these reprints (indicated as such on the cover) then you probably noticed a grammatical error in the heading. This was an oversight by our printer and you should rest assured that we do know the difference between edition and addition.

While digging through the cluttered desk this month I ran across several letters from people asking about the contents of back issues. A brief description of each can be found in the front of this issue.

I would like to take the time to say welcome to all who received T-S Horizons as a Christmas Gift Subscription. There were several. Also I've been meaning to send my thanks to Vern Tidwell whose letters are constantly appearing in my cluttered baskets. Thanks for writing, we enjoy your input. Thanks too, for all the letters from women. It seems there has been a notable increase in mail from your group. (Well Rick, I knew the picture on page 4 of issue 9 was a good idea).

Have you ever noticed the numbers above your name on the mailing labels? Well this represents the term of your subscription. The second number indicates the last issue you will receive. Again thanks to all who have sent in early renewals thus indicating continued confidence in our effort.

In the next issue I'll be telling you who our 1500th subscriber is. Remember just two months ago when we told you about subscriber number 1000? Well our new goal is to award a prize to number 2068 by April first.

On Rick's behalf we would like to thank Myles Lemon for clarifying the rock situation in T-SH #10, Horizons awards section. The original statement was obviously meant to indicate our ignorance of the blessings of civilization and technology (?) and is taken from the science-fiction classic "Hitchhikers Guide To The Universe". That's one for the "for what it's worth" department. Here's one from the free advertisement department in response to a letter from O.L. Orme.

%%% INCOME TAX PROGRAM %%%

Would like to know if there are any good Income Tax programs available, for the T/S 1000.

Hoping to hear from you soon.

Thank You, O.L. Orme, Richmond, CA

Check page 32 of this issue for ksoft co. It's worth the effort.

!!! COMPLAINTS/COMPLIMENTS !!!

In the current issue of T-S Horizons, you asked for comments on your publication, particularly the 40-page format. I, for one, had to unstaple the entire booklet in order to read the articles in the first half, because the "binder" edge of each page was hidden by the fold area, sometimes 4 or 5 characters deep. I suggest that if you publish another 40-page issue, you allow a wider blank in the center of each sheet for the fold-and-staple operation.

Until last fall, there was a seemingly very active branch of the "Southwestern TSUG" (also mentioned in the issue) located in Albuquerque. It folded in August or September, but in November John Brown was attempting to reorganize it. His address is 4608 Hilton Avenue N.E., Albuquerque, NM 87110.

Overall, I enjoy your magazine very much. Please keep up your support of the ZX-81, TS-1000, TS-1500 series. There are millions of owners of these machines (plus two or three Microace owners) who have not yielded to the 2068 temptation.

Rick Cavaness
Farmington, NM

Rick, thanks for letting me know. Watch your P.O. Box for a better copy.

+++ PRINTER HINT +++

First of all let me congratulate you on your 1st anniversary. I have enjoyed each of your fine issues.

Secondly, we now have the manufacturing and distribution rights for programs written by Kendrick C. Smith. Page 2 of the enclosed price list give the titles and descriptions of his programs. We have converted his ZX81 programs for use with the TS2068.

Here are a few tips that you may want to share with your readers, we have found them useful:

If you have a TS2068 connected to a full-sized printer you may not be able to COPY the screen, here is a little routine that can be used instead of the command COPY:

```
10 FOR x=0 TO 21
20 FOR i=0 TO 31
30 LPRINT SCREEN$(x,i);
40 NEXT i
50 NEXT x
```

The above routine can be inserted wherever the command COPY appears.

Keep up the good work.

Sincerely,
William M. Johnson
WMJ Data Systems
4 Butterfly Drive
Hauppauge, New York 11788

+++ BANNER ADDITION +++

In your December issue you have a banner program for the 2068 that works very well but has one major shortcoming: it can't print user defined graphics.

I have a short and simple remedy for this situation. Simply add the following to the end of line 13.

```
:IF L>16383 THEN LET
L=65367+8*(CODE C$(Z)-144)
```

I'm sure this simple addition will interest those 2068 users who typed in and ran the program.

I really liked your 40 page issue. Keep up the good work.

Sincerely, David Howell Orland, CA

Thanks David, I'll pass it along.

\$\$\$ VOTE OF CONFIDENCE \$\$\$

I have just read your December issue (No.10) and can say without qualification that your publication has steadily improved over time. As you will observe from your records, my first subscription was for 6 issues. That in part was an expression of skepticism that your newsletter would survive any appreciable time. The check I'm enclosing is for 12 additional issues - an expression of confidence in your continuing to provide a fine service to us TS users.

Sincerely,
Louis Holder

This concludes the second round of my journalistic effort. I appreciate all who have written this month and would have liked to print more if only we had room. None the less, we do read your mail and use your suggestions. Until next month keep writing and watch out for those banging rocks.

Partial Pascal

Pascal is a computer programming language, very popular on microcomputers, invented by Professor Niklaus Wirth of the Swiss Institute of Technology. Partial Pascal is a subset of Pascal for the ZX81, Timex Sinclair 1000 and 1500.

Partial Pascal includes IF, THEN, ELSE, CASE, OF, OTHERWISE, WHILE, DO, REPEAT, UNTIL, FOR, TO, DOWNT0, BEGIN and END for program control; read readln, write, writeln, reset, rewrite, eoln, eof, inkey and text for input and output; +, -, *, DIV, MOD, abs, chr, odd, ord, pred, succ and sqr for calculations; NOT, AND and OR for decisions; PROCEDURE, FUNCTION and FORWARD for subroutines; CONST, TYPE, VAR, ARRAY, Boolean, char and integer for data; copy, fast, slow, pause and halt for computer control; plot and point for graphics; and mem, mem2, memw, move and usr for machine language.

Partial Pascal executes much faster than BASIC because, as a compiled language, it doesn't have to search thru tables to find variables or search thru line numbers as BASIC does for each goto, gosub or next. Partial Pascal's 16-bit integer calculations are much faster than BASIC's arithmetic.

Please note our new address. Partial Pascal is supplied on cassette tape with instruction manual. 16K RAM required. \$30 postpaid from

Semper Software
585 Glen Ellyn Place
Glen Ellyn, Illinois 60137

T/S HELP and INFORMATION
By John Marion

NOTE: T-S Horizons and the author assume no responsibility for damages arising out of the use/misuse of these articles. The reader must understand that any modification suggestion here is to be taken at the reader's own risk.

METAL PAPER SOURCE

I am looking for thermal printing paper for my ZX printer. This thermal paper is the silver metal-coated kind. The TS 2040 thermal printing paper is incompatible with the ZX. Do you know any supplier and/or computer/electronic store that sells ZX type thermal printing paper?

Rufino Hilario
Passaic, NJ

First off I would like to say, that this paper is not the thermal type but electro-static, and you were right, in that thermal paper is incompatible with your ZX printer. Instead of heat sensitive paper like the TS 2040 uses, the ZX printer paper is black with a metal oxide coating over it. When the ZX printer prints, it passes a current through the paper, which vaporizes the metal coating, leaving the dark surface behind. Gladstone Electronics is the only supplier I know of. For a current price quote, you can contact them at the following address: Gladstone Electronics, 1585 Kenmore Avenue, Buffalo, New York 14217

(Integrated Data Systems

Toronto, Ontario M4M 1P3

Phone (416)466-5571

Also carries the metal paper. Editor)

JDM

ZX 81 PROBLEM

I have had a ZX81 since September, 1982 and have used it off and on ever since. I have now begun using it much more. I have a 2040 printer, byte-back modem and a 16K ram pack. The last two or three days, I have been unable to enter information into my computer and onto the screen. When I push down on the membrane keyboard nothing happens. If I take out the power supply plug and leave it off for a few minutes, and then plug it back in. I am able to enter a few commands, then it fails again to accept my commands. It is as though the membrane has gone out. What do you think is the matter? Could this be due to a lack of a heat sink? Is this serviceable and who services ZX81's at this time? Would it be cheaper just to buy another?

Ken Hatfield
Richmond, Kentucky

The first thing to try is to remove your modem and rampack from the computer and test the computer to see if the problem still exists. If the problem has gone, then suspect either the modem or rampack is defective. If the problem still does exist, then I feel that your computer has a bad Sinclair Logic chip. As to the servicing of your computer, your best bet would be to buy another, for the price has dropped below the twenty dollar mark. See issue number 10 page 6 for one supplier. One final note, the fact that your computer will accept input when you first power up, but then fails, rules out a defective membrane keyboard.

KEYBOARD PROBLEM

I do need help! Keys H, J, L, ENTER, B, N, M ., and SPACE won't function on my TS1000, and all the other keys work, except functions, because the ENTER-FUNCTION key doesn't work. I checked the ribbon cable from the keyboard to the circuit board and none of the connections are touching ground. I would appreciate any suggestions you might have.

Guy H. Nicholson

The problem sounds like, one of your ribbon cables is not making good connection to the computer. To correct this, remove the ribbon cable which has eight wires, form its socket. Leave the cable with five wires in place. Now inspect the end of the cable that you removed, for tears. If it is torn, trim off the end just above the tear. After checking the cable and fixing it if necessary, carefully re-insert it back into its socket. Now test the computer, by putting it back together without the screws, and trying all keys. If all keys work now, put the screws back in, and your back in business. If the keys still don't work, or others have stopped working also, try re-inserting the cable again. Repeat this several times if necessary. If you are still unable to the keys you listed working, try replacing the two diodes marked D7 and D8 and the top side of your computer, near the keyboard sockets. For replacement diodes, Radio Shack sells these in a package of 50 for \$1.98. The part number of this package is: 276-1620. When replacing these diodes, make sure to get the correct polarity.

JDM

This concludes the letters for this month. If you have a question or problem, please write me, and for a speedy reply, enclose a self addressed stamped envelope.

T/S Help and Information
John Marion
HC 63 Box 650
Greenup, Kentucky 41144

BITS and BYTES #3

By Bill Ferrebee
MOUNTAINEER SOFTWARE

Hello again, T/S lovers! Back again with more nonsense and trivia from the desk at MOUNTAINEER SOFTWARE. Hope all is well with you. I am recovering from hearing 4000 choruses of "We Wish You A Merry Christmas" from my 2068 and MUSICOLA (thank goodness it only comes once a year!).

I receive many cards and letters. Many times I can't find the time to reply immediately. This will be my New Years' resolution: To do my best to answer my mail sooner.

Taking one of the letters that I received in reply of the first "Bits and Bytes" column (Issue #8), it seems that Gladstone has terminated the KRAKIT contest. No one correctly solved the 12 clues, but Gary Gogel of Arizona City, AZ provided me with the correct answers that he received from International Publishing and Software of Canada (the producers of KRAKIT).

Here are the answers:

	COUNTRY	CITY	NUMBER
1.	Scotland	Edinburgh	7464
2.	U.S.A.	New York City	207
3.	U.S.A.	Chicago	1882
4.	Switzerland	Zurich	11
5.	Canada	Ottawa	282
6.	India	Delhi	7
7.	England	Salisbury	1538
8.	Mexico	Chihuahua	10652
9.	Italy	Verona	413637
10.	Russia	Moscow	1812
11.	Ireland	Ballaghaderreen	1916
12.	England	Cambridge	811000

In his letter, Gary told me that the explanation on how the answers were arrived at was 14 PAGES LONG!!!

Thanks, Gary for the answers. If any of you would like to communicate with him, his address is:
Gary Gogel
P.O. Box 2435
Arizona City, AZ 85223

I have just seen my first copy of a British Sinclair magazine! Would you believe it, I have been involved in T/S computers for over 3 years, and just saw my first magazine from England!

William Walker of Huntington, West Virginia sent me his copy of the December 83/January 84 issue of ZX COMPUTING, and WOW!!! I couldn't believe all that England has available for the ZX81 and Spectrum! Now that the

Spectrum is becoming available in the U.S., there will be next to nothing stopping us from getting all of that software...and hopefully we will be able to use much of the hardware in the near future, also.

If you have the addresses of any of the other British Sinclair magazines, please send them to me, so that I can subscribe to them. If you have any other issues that you wouldn't mind letting me borrow for a week, please send them. I will return the, posthaste, in excellent condition.

In the March issue of T-S HORIZONS, I plan on doing a comprehensive review of Database programs for the TS2068. It will be in a format similar to the one you will see in next month's issue for Word Processors.

If you have a Database program, and would like to be included in this survey, send me a review copy of the program. My address is below.

Bill Ferrebee
MOUNTAINEER SOFTWARE
115 North 7th Avenue
Paden City, West Virginia 26159

8

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Phone Day (____) _____ Eve (____) _____

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FEBRUARY 23rd - 24th

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In Touch with the World #5

By Bill Ferrebee
MOUNTAINEER SOFTWARE

Hello again, and welcome back to the column. I hope everyone had a nice holiday season, and is ready to face yet another exciting year in the world of T/S computing.

I will be able to now spend much more time with my computer and modem, as I am taking a "sabattical" from college. I am working to get some new products out into the market (word on one of them in the MTERM II Tutorial this month), and have just worked out an agreement with ONLINE of Atlanta, Georgia (see TSH #9) to be the SYSOP for the T/S SIG on ONLINE PLUS.

ONLINE PLUS will be a new service, similar to COMPUSEVE or the SOURCE, but better! Toll-free lines, a low hourly fee, and for T/S users, everything you can imagine! We will hold online User Group meetings every other Sunday afternoon, there will be a fully stocked Download section, and more, more, more! Keep looking in this column for more on ONLINE PLUS.

I have some bad news for those that are on MCI Mail. Effective January 1, 1985 is a yearly \$19.00 mailbox fee, and the Toll-free lines will cost .25 per minute of use. I am

very upset about how MCI baited us with this great service, and then turned around and made changes like these. I wrote MCI a letter, and have yet to receive an answer. Is this how it will all turn out? I hope not.

There is a new book out that helps to explain the MTERM II software in more detail, while doing it in easy-to-understand language. "TIMEX/SINCLAIR SMART TERMINAL TELECOMMUNICATIONS" is a 30 page full size manual that contains all of the information needed to properly use MTERM II. It sells for \$5.00 and is available from: Barry Carter, P.O. Box 614, Warren, Michigan 48090. I recommend it highly.

Because of the holiday rush, a few things were left undone. Because of the response to the FREE WEEKEND on RIVER CITIES SMART BBS, many were not able to get in and try it out. So, we will do it again...the weekend of February 23 & 23. Look for the ad in this issue.

I will also be reviewing the Byte-Back modem in the February issue. (I know..."you said that last month"...nobody's perfect!) If you have any comments or suggestions, please write. I will do my best to help in any way. Until next month...HAPPY TELECOMMUNICATING!

TSH

Tutorial

MTERM II

by Bill Ferrebee

Part II - Text Files

Welcome back to this series of tutorials on how to make proper use of the MTERM II program for the TS2068/Westridge 2050 modem combination. I hope this series helps you to get the most out of your computer in the area of Telecommunications.

This month we will take a look at how to properly Upload and Download a Textfile. A Textfile is a message or manuscript that is sent as formatted output. Examples are letters, articles, documentation, or many other types of text. The one problem with MTERM II is that you can not load a Word Processor into the buffer, write the Textfile, and then send it out. You must write the Textfile "offline". That is, you write it using a WP & save it to tape. Then, you load in MTERM II, and load the Textfile tape into the buffer.

MOUNTAINEER SOFTWARE has just released a Word Processor and Buffer Interface software package called LETTERITER/BUFFERITER to help you do just that. It was developed specifically for use with MTERM II using the 32 column mode. It is very easy to use, and sells for \$19.95 (plus \$1.50 shipping and handling) from: MOUNTAINEER SOFTWARE, 115 North 7th Avenue, Paden City, West Virginia 26159.

Using this software, the procedure is simple:

- 1) Load LETTERITER into the computer.
- 2) Write your Textfile, formatting it exactly as you want it to look on the screen.
- 3) Save the Textfile to tape.
- 4) Clear the computer, and load MTERM II.
- 5) Once loaded, (E)xit to BASIC, press NEW, and then load BUFFERITER.
- 6) RUN BUFFERITER, and press (J) to load your Textfile. The computer will return to MTERM once the Textfile is loaded.
- 7) Make sure your CON setting is at NONE. You can now send your Textfile in the same manner as Uploading a BASIC program.

If you would like to do it the "long" way, you can use the BASIC editor built into the 2068. By writing your Textfile as a BASIC program, using REM statements, you can do the job without a WP. When doing it in this manner, make sure the CON setting is set at REM. Downloading a Textfile is done in the same manner as downloading a BASIC program, except for the CON setting. Use NONE for this purpose. You may have to open the buffer yourself to catch the Textfile.

Next month, we will look at the proper use of Macrokeys, and how to set them for your own needs.

TSH

"CHARGE ACCOUNT BARGRAPH"
TS1000 or TS 2068
By Bob Woish

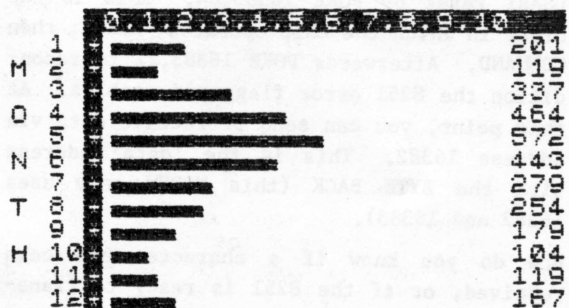
Like many other modern consumers, the plastic money in my pocket sometimes spends a little easier than I would like it to. And when the bills come in, the balances are invariably higher than what I remember spending. Those charges add up fast! Fortunately, though, this gives me an excuse to write another ZX/TS Home Applications program - a monthly charge account monitor/bar graph designed to provide incentive to reduce those balances month by month, and watch the graph lines grow shorter.

The program accommodates amounts up to \$999.00. This figure can be adjusted if needed by changing the digits in line 37 and the plot formulas in lines 170 and 175. It graphs your balances horizontally and prints the dollar amounts numerically in the far right-hand column for each to twelve months. A separate graph can be made for each account.

Lines 140-200 are the heart of the program and are particularly interesting. Lines 140 and 150 call out three letters at a time for M\$ (in line 110) and print them at the appropriate times. Line 140 not only controls the number of passes through the FOR 0 NEXT loop but also specifies the month for which data is being processed - thus performing two functions simultaneously. Lines 170 and 175 control the length of the graph bars, while lines 190 and 195 control the screen lines to be graphed and to hold numeric dollar amounts.

Of course, the program could be useful for other purposes also. By changing the print statements in lines 10 and 36, it could be used in small business for monitoring monthly expense accounts, new customers per month, total sales, almost anything. A bar graph makes numbers more tangible.

CHARGE ACCOUNT BALANCES
WOISH/S DEPT. STORE 1985
BALANCE ON ACCOUNT:



TS 1000 VERSION

```

1 REM CHARGE ACCOUNT
2 REM BY R.E.WOISH - 1/30/84
10 PRINT "CHARGE ACCOUNT BALAN
CES BY MONTH"
20 PRINT AT 2,0;"ENTER YEAR"
24 INPUT Y
26 PRINT AT 2,28;Y
28 PRINT AT 2,0;"ACCOUNT NAME
?"
30 INPUT N$
32 PRINT AT 2,0;"
34 PRINT AT 2,0;N$
36 PRINT AT 4,8;"BALANCE ON AC
COUNT:"
37 PRINT "0.1,2,3,4,5
6,7,8,9,10"
38 LET A$="MONTH"
40 FOR A=8 TO 16 STEP 2
50 PRINT AT A,1;A$(1)
60 LET A$=A$(2 TO )
70 NEXT A
75 FOR A=7 TO 18
80 PRINT AT A,6;"
85 NEXT A
90 FOR A=1 TO 12
95 PRINT AT A+6,4;A
99 NEXT A
100 LET L=28
105 LET K=7
110 LET M$="JANFEBMARAPRMYJUNJ
ULAUGSEPOCTNOVDEC"
140 FOR X=1 TO 34 STEP 3
150 PRINT AT 20,0;"ENTER BALANC
E AS OF ";M$(X TO X+2)
160 INPUT B
170 FOR D=1 TO B/12.5
175 PLOT 14+D/2,L
180 NEXT D
185 PRINT AT K,29;B
190 LET L=L-2
195 LET K=K+1
200 NEXT X
210 PRINT AT 20,0;"FOR HARD COP
Y HIT "C"
220 INPUT C$
230 IF C$="C" THEN GO TO 250
240 STOP
250 PRINT AT 20,0;"SAVE FOR FUT
URE REFERENCE"
260 IF C$="C" THEN COPY

```

FOR THE TS 2068

Change line 175 to

175 PLOT 56+2*D,L*4

TSH

Experimenting With The Byte Back Modem

By Gordon Young

Writing machine code software is something that cannot be accomplished easily overnight. For quite some time, I have been writing a bulletin board program for the TS-1000. This means first of all, I have to find out how the MODEM works. Since ANCHOR AUTOMATION (the manufacturers of the TS2050) and Westrige would not provide any help, I could not begin to write this program for that MODEM. BYTE-BACK provided a complete source code for their software which included the information needed to input and output data.

The BYTE BACK MODEM doesn't use the Z-80 in/out ports (and I don't understand why), but instead uses logic gates that activate the 8251 USART, used to send and receive data. The 8251 is the heart of this MODEM. This chip catches the data from the data bus, serializes it and inserts the appropriate start/stop bits, parity, etc. If you aren't familiar with how MODEMS work, that alright. Just remember it has an input side to get the data, a clock to determine its transmission speed, a serial output of the tones necessary for decoding at the other end. But more than anything, the 8251 USART can send and receive at the same time.

Before using the USART, it must be initialized. This process merely informs the chip what parameters you want. This is where knowing the command 'format' comes in. The data you put on the data bus for setting parameters looks like this:

```

BIT 7 0 0 1 1
BIT 6 0 1 0 1
BIT 5 0 1 0 1
BIT 4 0 1 0 1
BIT 3 0 0 1 1
BIT 2 0 1 0 1
BIT 1 0 0 1 1
BIT 0 0 1 0 1
    
```

number of stop bits
PARITY
PARITY ENABLE
CHARACTER LENGTH
BAUD RATE

NUMBER OF STOP BITS:

```

BIT 7 0 0 1 1
BIT 6 0 1 1 1
    
```

2
1½
1
invalid

PARITY: BIT 5 0 1
even
odd

PARITY ENABLE: BIT 4 0 1
ENABLE
DISABLE

CHARACTER LENGTH: BIT 3 0 0 1 1
BIT 2 0 1 0 1
8 bits
7 bits
6 bits
5 bits

BAUD RATE: BIT 1 0 0 1 1
BIT 0 0 1 0 1
x 64
x 16
x 1
SYNC MODE

Each bit of our 8 bit bus has been defined so you can select your own parameters. The Byte Back MODEM operates at 250 baud, which is 1/16th of the clock speed. Data bits 1 and 0 will have to be 1 and 0 respectfully.

With 7 bit words, bit 3 and 2 are 1 and 0, respectfully. Likewise, setting to even parity would be 1 and 1 for bits 5 and 4. Lastly, for 1 stop bit, bits 7 and 6 would be 0 and 1. Now, for 7 bit words, 1 stop bit, even parity, 250 baud, our data byte would be:

0 1 1 1 1 0 1 0 binary value
1 2 2 decimal

The Byte Back uses address 16383 for status, thus you can POKE 16383,122 to set your parameters. Before doing this, establish a USART reset by POKE 16383,64. This is the order in which the chip operates, RESET, then COMMAND. Afterwards POKE 16383,22 to recondition the 8251 error flags and enables. At this point, you can send or receive data via address 16382. This is the 'data' address with the BYTE BACK (this MODEM only uses 16382 and 16383).

How do you know if a character has been received, or if the 8251 is ready to transmit? After a RESET and COMMAND, address

16383 will provide a status. You can find out the communication status by knowing the bits for this mode:

BIT 1 READY TO TRANSMIT WHEN 1 (HIGH)

BIT 2 CHARACTER RECEIVED WHEN 1 (HIGH)

In BASIC you cannot check these bits easily, so, maybe you would prefer a machine code routine to do this.

LD A, (16383)	58	LD A, (16383)	58
	255		255
	63		63
AND 1	230	AND 2	230
	1		2
JR Z, -7	40	JR Z -7	40
	249		249
RET	201	RET	201

wait until ready	wait for a received
to transmit	character

In machine code, ANDing has the same effect as a typical logic gate where you AND logic 1 with a bit.



ANDing bit 1 will produce a high on the output only when the bit is high (logic 1). In this manner, we can test individual bits of an entire byte.

Let's say the routine to wait for a received character began at 16514. And let's say you were talking directly with another TIMEX MODEM and needed no ASCII conversion. That is, A TS-1000 with a BYTE BACK MODEM IN ORIGINATE, and the host TS-1000 with a a BYTE BACK IN ANSWER mode. You could communicate directly with a simple program:

```

5 RAND USR 16514
10 PRINT CHR$ PEEK 16382
15 GOTO 5

```

Here the host would wait for a new received character. When one is received, it gets printed onto the screen.

The originate computer's program may have the "wait until ready" machine code at address 16525. His program would go something like this:

```

5 IF INKEY$="" THEN GOTO 5
10 LET A$=INKEY$
15 RAND USR 16525
20 POKE 16382, CODE A$

```

Those of you keeping up with me may already be thinking of upload/download through BASIC. I suppose you could move RAMTOP down, download a program in this fashion above RAMTOP. But, I'm not sure how to recover it without losing the stackpointer, variables, screen, etc. It would be tricky, but you could try. TO SEND the entire program you could have a program like this:

```

5 LET A=PEEK 16404+256*PEEK 16405
10 FOR N=16509 TO A
15 RAND USR 16525
20 POKE 16382, PEEK N
25 NEXT N

```

Very simply, this would send all data in the BASIC area of RAM to the host. I have not tried these routines in BASIC, but have connected the TS-2068 and TS-2050 directly to the TS-1000 and BYTE BACK MODEM with successful transfer of data. The MODEM works at 250 baud and there is no reason one could not develop communication software in BASIC. Clever programmers might try experimenting.

TSH
13



"...received my moneys worth with just one issue..."

—J. Trenbick

"...always stop to read CTM, even though most other magazines I receive (and write for) only get cursory examination..."

—Fred Blechman, K6UGT

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SUPERPRINTER

By James A. Webster

The Timex/Sinclair 2040 personal printer is really a super printer, especially for the price. It turns out those program listings so easily and quickly that it's almost better than looking at the listing on the screen. When I bought my printer, however, I was hoping that I would be able to do more than that.

It's true you can COPY and LPRINT anything that can be shown on the screen, but that still leaves much to be desired. At times, we would all like to have lower-case letters, an exclamation point, an apostrophe, or perhaps other more specialized characters. I don't like to feel like my printer is that inferior to the more expensive printers. So I developed a program called SUPERPRINTER. And in three easy steps I will show you how to make your own Timex/Sinclair 2040 print upper-case and lower-case letters.

Enter the program as follows:

1) Type in Listing 1. Press RUN and ENTER.

2) In FAST mode, type in Listing 2. Press RUN and ENTER. At the prompt, ENTER each number in Figure 1, going by columns. Be sure to note that the twelfth number is 35 for the 2K version although it is 63 for 16K use. As you ENTER each number, it is displayed on the screen along with the address it is being POKed into. If you make a mistake write down the address and POKE the correct number into that address after the program is done. When the last number has been ENTERed the screen will go blank and an inverse K cursor will appear. If you had any errors, correct them now.

3) In FAST mode again, type in Listing 3. Your program is now complete. To SAVE it for future use, press RUN 9800 and ENTER and start your tape recorder recording. Make sure you get a good SAVE or two so that you don't ever have to ENTER all those numbers again. Whenever you want to LOAD the program you must first RUN the appropriate program from Listing 1 and then LOAD "SUPERPRINTER".

You are now ready to use the program and do some SUPERPRINTING! SUPERPRINTER can be used from immediate mode or from within a program that you add between lines 5 and 9700. To

for the TS1000 (2K or 16K RAM)
Lower-case letters on the
Timex/Sinclair 2040!

COPY the screen with SUPERPRINTER you simply ENTER the command GOSUB 9710. If you want to COPY a number of lines other than the usual 22, then first LET NUM= the number of lines you want (from 1 to 24) and then GOSUB 9700. The number of lines COPYed will stay the same until you change them again. To LPRINT a string with SUPERPRINTER you must first LET Z\$="the string" and then GOSUB 9730.

If you experiment with these commands you will note that GRAPHICS symbols and numbers are printed normally but all letters are printed in lower-case. For upper-case letters you must type inverse (GRAPHICS) letters. You can also use inverse 8 to print an exclamation point and inverse 9 for an apostrophe. Go ahead and try out the new power now available to you.

If you only have 2K of memory and find yourself running out of space too soon you may wish to delete lines 9800 through 9920 to make a little more room. With 16K you should leave these lines in so that if you write an additional program that you want to SAVE you can RUN 9800 and SAVE the whole program, including data and machine code above RAMTOP. Remember to note that you will have to set RAMTOP correctly, by RUNning Listing 1, before reLOADing.

Figure 2 gives a sample program used with SUPERPRINTER along with the resulting print-out. This demonstrates how to use the new capabilities of your printer. If you would like to understand a little more of how this all works, and maybe make some changes in the characters printed, please continue reading.

First, the reason why the LPRINT routine in the ROM can't print lower-case letters: It sends out data to the printer which tells it whether to make each little dot black or white. For the shapes of the characters it is programmed to rely on the same dot pattern table used to store the shapes of characters displayed on the screen. There apparently was not enough room in the 8K ROM for this table to hold anything but the upper-case letters and other Sinclair characters.

Both the LPRINT routine and the dot pattern table it uses are in ROM (Read-Only Memory) so we cannot change them. We must move them to the RAM and use them there if we are going to make modifications. The program given in Listing 1 changes the system variable RAMTOP so as to make room for the ROM routine and table above the BASIC operating system area.

Lines 10 through 50 of Listing 2 move the 140-byte LPRINT routine to this new area. Lines 60 and 70 change it so that rather than automatically use the ROM dot pattern table, it jumps to a control routine at the end of it.

This 32-byte machine language routine is INPUT from Figure 1 by lines 90 and 100 of Listing 2. It determines when to use the ROM table and when to use our own table. The routine is shown in disassembled form in Figure 3. The JR REENTRY instruction at the end returns control to where the LPRINT routine was left, with the H register properly loaded. The H register must hold half the value of the most significant byte of the address the table starts at.

Listing 1. Setting RAMTOP.

For 16K machine:

```
10 POKE 16388,84
20 POKE 16389,125
30 NEW
```

For 2K machine:

```
10 POKE 16388,84
20 POKE 16389,69
30 NEW
```

Listing 3. SAVE and use program.

```
5 LET RT=PEEK 16388+256*PEEK 16389
9699 STOP
9700 POKE RT+1,NUM
9710 RAND USR RT
9720 RETURN
9730 FOR N=16444 TO 16475-(32-LEN Z$)*(LEN Z$<33)
9740 POKE N,CODE Z$(N-16443)
9750 NEXT N
9760 RAND USR (RT+8)
9770 IF LEN Z$<33 THEN RETURN
9780 LET Z$=Z$(33 TO )
9790 GOTO 9730
9800 LET A$=""
9810 LET B=PEEK 16388+256*PEEK 16389
9820 FOR N=B TO B+683
9830 LET A$=A$+CHR$ PEEK N
9840 NEXT N
9850 SAVE "SUPERPRINTER"
9860 IF B=PEEK 16388+256*PEEK 16389 THEN GOTO 9890
9870 PRINT "RAMTOP WAS NOT SET CORRECTLY."
9880 STOP
9890 FOR N=B TO B+683
9900 POKE N,CODE A$(N-B+1)
9910 NEXT N
9920 RUN
```

Listing 2. ENTERING data.

```
10 LET A=PEEK 16388+256*PEEK 16389
20 FOR N=2153 TO 2292
30 POKE A,PEEK N
40 LET A=A+1
50 NEXT N
60 POKE A-77,24
70 POKE A-76,75
80 PRINT "ENTER EACH NUMBER IN FIGURE 1."
90 LET B=31
100 GOSUB 1000
110 LET A=A+320
120 LET B=223
130 GOSUB 1000
140 NEW
1000 FOR N=A TO A+B
1010 INPUT C
1020 SCROLL
1030 PRINT N,C
1040 POKE N,C
1050 NEXT N
1060 RETURN
```

Listing 4. Char. designing aid.

```
9000 PRINT "ENTER CHARACTER NUMBER(0-63)-";
9010 INPUT A
9020 IF A>63 OR A<0 THEN GOTO 9010
9030 PRINT A;AT 4,11;"
9040 FOR N=5 TO 12
9050 PRINT AT N,11;"
9060 NEXT N
9070 DIM A(8,8)
9080 LET B=1
9090 LET C=8
9100 LET D=128
9110 SLOW
9120 PRINT AT 4+B,11+C;CHR$ D;AT 4+B,11+C;CHR$ ABS (D-128)
9130 LET E=CODE INKEY$
9140 IF E<33 OR E>43 OR (E>36 AND E<41) THEN GOTO 9120
9150 IF E=43 THEN GOTO 9240
9160 IF E<37 THEN GOTO 9200
9170 LET D=128*(E-41)
9180 LET A(B,C)=42-E
9190 GOTO 9120
9200 LET C=C+(E=36 AND C<8)-(E=36 AND C>1)
9210 LET B=B+(E=34 AND B<8)-(E=34 AND B>1)
9220 LET D=128*(1-A(B,C))
9230 GOTO 9120
9240 LET E=A*8+32255
9250 FAST
9260 FOR B=1 TO 8
9270 LET A=0
9280 FOR C=1 TO 8
9290 LET A=A+A(B,C)*2*(8-C)
9300 NEXT C
9310 POKE E+B,A
9320 NEXT B
```

The remainder of the BASIC program in Listing 2 is used to INPUT the rest of the data from Figure 1. This data determines the shape of the new characters.

The main SUPERPRINTER program in Listing 3 is pretty straightforward. Lines 9800 and on are used only when SAVING the program. The data and machine code above RAMTOP is loaded into A\$ so that it will be SAVED too. When the program later is LOADED it will be POKED back into the proper locations. Line 5 must be RUN before the rest of the program will work. Lines 9730 to 9790 may look a little complicated but all they do is load Z\$ into the LPRINT buffer at addresses 16444 to 16475 and LPRINT it one line at a time.

If you've been itching to design some characters of your own the time has come. Figure 4 shows a sample portion of the dot pattern table. The formula is given for finding where each character shape starts. The pattern is visible in the binary version. You can design your characters on paper and POKE the values in directly if you understand this technique. For those with 16K, however, there is a much easier way to design your own characters. Just add the lines in Listing 4 to your existing SUPERPRINTER program.

When you start this program, using RUN or RUN 9000, you will be prompted for a character code between 0 and 63, inclusive. Refer to your BASIC manual for the character codes. Codes 36 through 63 are already used but you can of course change them. Codes 11 through 35 are best to use for additional characters. These will be LPRINTed when the GRAPHICS inverse of that character is sent to SUPERPRINTER.

Use the unshifted arrow keys (5 through 8) to move the flashing cursor. Press "D" to draw a pixel and "E" to erase one. Press "F" when finished. The program will then POKE the correct data into the proper locations and STOP at line 9699. After designing a character with this program, you can COPY the screen for a hard copy of your design or you can RUN or RUN 9000 to design another character.

If you decide that you want to print only your own characters without switching back and forth between upper-case and lower-case letters then you should bypass the machine language control routine. To do this you need to POKE RAMTOP (RT) +63, 38. Also POKE RT +64, 63(or 35 for 2K). Now only the characters you have designed will be printed and not the regular Sinclair characters.

With a little imagination I'm sure you will find even more exciting ways to use this new power of your printer. Complete high-resolution printouts can be done. The alphabet of a different language could be printed. Characters could be printed

Figure 1. Data to be ENTERed.

245	0	0	0	0	0	0	0
121	16	0	0	64	0	0	0
7	16	00	00	00	00	00	00
56	16	00	00	72	00	04	04
9	16	04	00	00	00	00	04
31	0	00	02	104	00	0	00
254	16	00	0	00	00	00	40
30	0	0	00	0	0	0	0
56	0	0	0	0	0	0	0
17	16	00	04	112	0	0	0
30	16	00	04	16	124	32	00
63*	32	00	124	16	00	124	32
24	0	000	000	16	00	32	24
19	0	000	000	16	124	32	36
203	0	02	00	124	04	24	00
63	0	0	0	0	04	0	0
79	0	0	0	0	0	0	0
254	0	0	16	0	0	0	0
38	60	00	0	00	00	00	00
40	2	00	40	40	00	00	40
6	62	124	16	40	00	00	16
254	66	04	16	40	02	70	16
11	62	02	124	40	2	58	16
48	0	0	0	0	2	0	96
241	0	0	0	0	0	0	0
203	64	12	0	0	0	0	0
249	64	18	02	02	02	60	126
38	124	16	0	34	34	60	4
19	66	124	2	34	32	60	24
241	66	16	2	34	32	40	32
24	124	16	06	34	32	16	126
149	0	0	60	0	0	0	0

* Should be 35 for 2K version.

Figure 2. SUPERPRINTER example.

```

5 LET RT=PEEK 16388+256*PEEK 16389
10 LET Z$="THIS IS A DEMONSTRATION OF THE SUPERPRINTER PROGRAM WITH THE TIMEX-SINCLAIR 2040 PRINTER:"
20 GOSUB 9730
30 PRINT
40 FOR N=0 TO 63
50 PRINT CHR$(N+128);CHR$(N);
60 NEXT N
70 LET NUM=8
80 GOSUB 9700
9699 STOP

```

This is a demonstration of the SUPERPRINTER program with the Timex-Sinclair 2040 printer:

```

" f $ : ? ( ) > < =
+ - * / 9 Aa Bb Cc Dd Ee
Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo P
p Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

```

Figure 3. M.L. control routine.

```

ADDR  DEC.  NAME  ASSEMBLY
RT+ CODE  LANGUAGE
=====
140 245 CONTROL PUSH AF
141 121 LD A,C
142 7 RLC A
143 56,9 JR C INVERSE
144 31 RRA
145 254,38 CP 38d
146 50,17 JR C NORMAL
150 38,63* OWN CH LD H, 63d
152 24,15 JR DONE
154 203,63 INVERSE SRL A
155 70 LD C,A
157 254,38 CP 38d
159 48,6 JR NC NORMAL
161 254,11 CP 11d
163 48,241 JR NC OWN CH
165 203,249 SET 7,C
167 38,15 NORMAL LD H, 15d
169 241 DONE POP AF
170 24,149 JR REENTRY

```

* 35 for 2K version.

upside-down or sideways. You can print your own graph paper for special uses. And you can also print very nice graphs. Or you may also need some special math or science symbols. A real classy touch at the end of a letter is to have the printer print your signature just like you would sign it.

Whether you go on to design your own characters and special uses for SUPERPRINTER or use the upper-case/lower-case capability for word processing I'm sure you will have fun making the most out of that amazing little black box called a Timex/Sinclair 2040. Let me know of any other uses you can dream up for SUPERPRINTER.

If you don't feel like typing in the programs in this article, the author will send you a copy on tape for \$6, postpaid, in the United States, or \$9 foreign.

TSH

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Figure 4. Dot pattern table.

8*38(CODE for "A")+172+RAMTOP=
A START=18224(2K) or 32560(16K)

	Dec.	Binary
A START	0	00000000
	60	00000000
	60	00111100
	60	00000010
	60	00111110
	60	01000010
	60	00111110
	0	00000000
B START ...		



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BANK SWITCHING ^{PART}₇

by Paul Hunter

The operating routines for the bank switching and file management system are now more or less complete. Some changes have been made since last month to fit the program into 2048 bytes and in order to avoid any confusion the entire list is presented in Figure 1. Only the data are listed -- the first address is 8192 and the last is 10239. (The memory map will be illustrated next month.) Although all the subroutines are nonrelocatable, the main program from 9720 to 10239 can be moved to any location you wish. It is accessed by a jump from 8192.

The program is suitable for use either with a bank-switched system or with a regular 64K RAM pack. As mentioned last week, a 64K RAM pack may be regarded as a 32K system with a single 16K bank.

The listing is tedious to load accurately by hand and can be obtained from the author on cassette for \$10 ppd. (See advertisement for address.) The program on the cassette will autorun on loading to reset RAMTOP to 49110; load the operating system into the 8-10K block; and then load an empty directory into the bank occupying the 49152-65535 block. The directory can be loaded into other banks at this stage. The operating system can then be initiated by executing RAND USR 8192.

One of the changes from last month has been to locate the system variables outside the 8-10K block at 49110-49151. This has the distinct advantage of allowing the operating system to be placed in read-only memory (EPROM, EEPROM, or NVM with write-protect). The new addresses will also be listed next month.

Before describing the use of this system in more detail, I want to mention some of the points raised by you.

POINTS ARISING

The first concerns the physical layout of the hardware. It is important not to spread everything out too much -- remember that 10-12 inches is

generally the maximum reliable length of data, address, and control lines without proper termination. Note that if you wish to terminate your busses properly there are special termination resistor networks available these days in a SIP configuration which makes the task easy.

Some readers have used larger dynamic memory packs in a switched system. In this regard note that Gladstone Electronics, Inc. (1585 Kenmore Ave. Buffalo, NY 14217 (716) 874-5510) currently have their 64K pc board (order no. PCB64/44) with male and female connectors on offer for \$9. This is the board described in the last issue of Timex-Sinclair User and is an excellent buy at this price -- the connectors alone are worth \$6.50. Note that dynamic memory refreshed through row addresses A0-A6 can be selected or deselected using the \overline{CAS} signal -- and therefore can be divided into banks.

Finally, and I am indebted to Robert A. Jenkins of Chicago Heights for ideas along these lines, is the suggestion to control the operating system described herein from within a program. This creates a virtual memory system with a memory size (program or data) limited only by the number of banks and your imagination. The modular nature of the system makes this scheme relatively easy to implement. Since we're going to run out of space this month these ideas will be developed in the final instalment next month.

THE OPERATING SYSTEM

The initial set-up requires at least 64K of memory with the operating system located at 8-10K. Execution of RAND USR 8195 will reset RAMTOP to 49110. The directory described last month should be loaded at 49152 -- at the beginning of the bank. Loading the cassette tape will do all this automatically.

Entry of RAND USR 8192 will start the main program. The first thing to happen is the display of the directory and menu. The program waits for a response ('1' through '8'). Any key other than '1' through '7' causes a return to BASIC.

BANK 1 DIRECTORY

```
=====
NO.  NAME      .EXT  ADDR  SIZE
----  -
A:  DIRECTORY  .DIR:49152:00704:
B:
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
=====
1:SAVE 3:PURGE 5:PACK 7:ROOM
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

You could, for example, respond with a '7' to display the amount of available space in the bank:

ROOM IN BANK = 15680

Enter an '8' to return to BASIC and then enter a program to test the system. Run the program to initialize some variables. Use one of your own programs or, for example, enter:

```
10 REM TEST OF OPERATING SYSTEM
20 PRINT "THIS IS LINE 1"
30 PRINT "THIS IS LINE 2"
40 PRINT "THIS IS LINE 3"
50 LET VARIABLE=11
60 LET T$="T S HORIZONS"
70 PRINT T$;" ISSUE ";VARIABLE
80 PRINT "THIS IS THE LAST LINE"
```

Now enter RAND USR 8192 and this time choose response '1':

```
ENTER "FILENAME.EXT":
PROGRAM NO1.PRG
```

In answer to the prompt, enter a filename -- for example "PROGRAM NO1.PRG". There's no need to enter the period between the filename and the extension (in fact you shouldn't). If you make a mistake then the 'delete' key will allow you to start again.

The option now presented is to save the entire file (by entering 'A') or some part of the file. 'S' represents the starting line number of the program in case you forgot (you could enter the number) and 'E' represents the last line number. Of course, entry of 'S' and then 'E' has the same result as entering 'A'. Let's save the entire program by entering 'A'. Then enter 'S' to initiate the SAVE and hit any key to redisplay the directory:

BANK 1 DIRECTORY

```
=====
NO.  NAME      .EXT  ADDR  SIZE
----  -
A:  DIRECTORY  .DIR:49152:00704:
B:  PROGRAM NO1.PRG:49856:00200:
C:
D:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
=====
1:SAVE 3:PURGE 5:PACK 7:ROOM
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

Note that the file is located at 49856 and that it is 200 bytes long. (Actually it's 198 bytes long plus two bytes to store the size.) Determination of the room left in the bank shows that the available space has been reduced by 200 bytes.

ROOM IN BANK = 15480

While on the subject of saving, try saving the variables (as "VARIABLES 1.VAR" for example) and then the total system (as "TOTALSYSTEM.TOT"). Note that the size of the total system is much larger than the other two files. This is mainly because it includes the display file (704 bytes long). It is more economical in bank space to save the program and variables separately. The screen during a save operation looks like:

```
SAVE A FILE

ENTER "FILENAME.EXT":
TOTALSYSTEM.TOT
EXECUTE SAVE (S) OR ABORT (A):
ADDRESS: 50086
SIZE: 1138
PRESS ANY KEY TO CONTINUE
```

Finally, try saving a limited range of lines from the program -- for example lines 20-40. In a real application this might be a subroutine. Enter 20 and 40 in answer to the prompts in the save operation. Again, if you make an error, the 'delete' key will erase the entry and allow you to start again. The directory now appears as:

FIGURE 1

195	32	237	62	42	40	205	17	62	46	11	201	191	183	201	0	42
248	42	176	119	27	8	219	108	0	51	205	34	78	237	62	17	0
37	218	201	184	42	62	21	33	57	42	90	214	35	82	118	108	60
33	191	33	40	61	0	201	205	52	0	32	191	70	48	215	36	46
91	113	228	218	57	190	42	107	0	52	201	237	201	6	1	205	49
64	35	191	112	11	32	226	11	40	55	62	83	205	42	11	107	49
249	112	6	229	14	245	191	205	52	0	118	216	27	12	0	11	0
33	35	28	205	42	34	17	54	51	16	215	191	33	64	17	201	39
214	235	54	188	61	226	16	32	57	56	215	62	96	34	39	51	42
191	237	22	32	42	191	0	3	46	17	1	41	105	216	36	52	0
34	176	35	225	40	183	183	3	51	57	30	201	205	191	205	0	43
4	201	16	35	58	237	237	205	58	38	0	62	216	62	107	43	49
64	205	251	62	57	82	82	219	42	55	17	118	9	41	11	46	38
43	187	62	27	42	229	235	33	42	57	69	215	201	201	201	49	44
54	2	27	190	0	205	33	58	51	14	33	215	205	56	42	42	44
62	68	50	40	56	27	228	57	57	0	205	1	195	38	51	0	42
43	77	239	250	38	33	191	64	42	49	107	60	35	59	57	43	41
249	44	191	62	59	225	1	14	55	38	11	0	35	42	42	52	0
43	40	62	14	42	197	28	19	0	56	201	17	35	0	55	58	38
43	248	14	190	0	1	0	145	57	57	62	139	94	38	0	51	51
34	205	50	32	16	6	237	71	45	0	118	34	35	0	49	41	41
2	189	243	228	56	0	176	62	42	49	215	205	86	43	42	62	0
64	7	191	201	17	9	201	5	0	46	215	107	35	46	57	118	0
195	205	50	205	0	205	237	144	49	51	1	11	25	49	57	215	0
118	38	249	188	52	27	91	33	46	42	23	62	201	42	42	215	0
6	33	191	35	55	33	12	250	51	0	0	118	205	49	55	1	53
0	126	50	42	0	225	64	191	42	52	17	215	121	52	0	13	58
192	201	255	20	38	9	42	54	0	55	91	1	35	38	16	0	55
5	42	191	64	39	34	218	28	55	0	34	23	213	41	38	17	44
6	12	201	43	52	224	191	35	38	16	205	0	205	0	0	182	42
0	64	237	197	55	191	62	16	51	42	107	205	144	38	57	36	41
14	237	75	229	57	201	22	251	44	17	11	107	35	0	52	205	0
33	91	220	205	0	42	19	17	42	51	201	11	62	43	0	107	60
0	218	191	158	16	226	1	254	0	41	62	201	38	46	52	11	45
0	191	205	9	38	191	32	191	52	14	118	205	190	49	17	201	42
57	62	245	209	17	43	0	6	55	0	215	43	32	42	0	33	51
237	22	8	193	14	43	237	0	0	0	215	15	5	40	52	115	0
91	35	1	42	38	43	176	79	42	0	1	42	209	45	43	192	57
28	1	15	218	41	43	61	42	51	0	17	14	205	38	0	17	45
64	32	0	191	41	126	32	14	57	46	0	64	100	51	43	32	42
237	0	17	35	55	201	247	64	42	51	17	229	35	44	46	0	0
82	237	228	35	42	1	201	43	55	59	245	205	201	42	49	6	39
201	176	191	237	56	0	62	237	0	38	34	90	62	0	42	37	38
33	61	205	176	56	9	118	184	0	49	205	32	56	39	14	144	51
255	32	107	201	14	205	215	201	0	46	107	71	190	38	0	71	48
31	247	11	34	0	245	215	51	16	41	11	62	40	51	0	25	0
237	201	201	22	56	8	1	52	38	0	201	119	5	48	11	16	46
91	205	205	64	46	1	9	57	17	42	42	184	205	56	63	253	56
16	188	161	126	63	15	0	0	49	61	16	32	195	42	11	34	0
64	35	32	205	42	0	17	42	49	57	64	18	35	51	0	226	55
183	17	237	217	14	17	99	51	0	42	237	225	24	57	60	191	42
237	9	75	20	0	117	33	52	43	51	91	34	3	42	46	205	53
82	64	220	205	0	33	205	58	52	56	20	14	33	55	49	27	38
201	42	191	167	0	205	107	44	55	46	64	64	125	0	49	33	40
58	218	5	14	0	107	11	45	0	52	27	229	64	39	0	237	48
240	191	5	201	55	11	237	0	57	51	205	62	34	38	55	67	42
191	35	205	237	52	205	75	55	45	53	111	0	214	51	42	218	41
1	35	245	91	52	205	224	52	42	58	35	6	191	48	41	191	53
192	237	8	222	50	33	191	52	0	55	201	5	209	0	46	201	58
2	176	1	191	0	205	205	50	42	44	33	215	205	55	56	62	55
254	201	21	27	46	217	219	0	51	42	9	16	134	42	53	118	44
41	205	0	122	51	33	33	46	57	0	64	253	35	54	49	215	42
200	188	17	179	0	201	42	51	46	38	237	225	205	58	38	215	0
42	35	48	32	39	33	14	0	55	0	91	34	144	46	62	1	16
216	42	33	251	38	255	64	39	42	43	20	14	35	55	0	15	53
191	12	205	201	51	255	43	38	0	46	64	64	62	42	41	0	17
237	64	107	42	48	237	1	51	53	49	205	24	42	41	46	17	0
91	197	11	51	0	91	5	48	55	42	111	228	190	14	55	91	52
214	229	205	57	20	224	0	53	52	62	35	61	40	62	42	34	55
191	43	188	42	0	191	17	55	44	118	201	184	15	118	40	205	0
183	205	32	55	33	27	248	42	55	215	33	40	205	215	57	107	58
237	158	33	0	147	183	191	56	38	215	125	4	204	1	52	11	51
82	9	228	11	192	237	237	56	50	1	64	120	35	11	55	201	53
68	209	191	43	17	82	184	0	43	25	237	215	34	0	62	57	58
77	193	229	46	32	201	62	38	46	0	91	24	216	17	62	45	55
201	42	205	49	0	68	118	51	55	17	12	221	191	28	118	42	44
205	218	90	42	25	77	215	62	56	114	64	225	235	36	215	0	42
63	191	32	51	62	205	1	0	57	34	205	201	42	205	215	43	0

16	17	62	3	36	37	254	197	245
58	0	118	3	205	205	34	197	33
17	53	215	197	90	90	32	1	205
15	55	215	205	32	32	22	6	43
55	52	1	132	245	245	205	0	15
42	44	20	33	205	205	224	9	42
40	55	0	34	42	168	37	205	12
49	38	205	218	10	36	205	27	64
38	50	107	191	205	205	90	33	17
46	62	11	205	35	90	32	225	185
50	118	201	205	15	32	1	9	0
0	215	0	33	241	245	95	229	25
53	1	205	183	254	205	28	235	34
38	12	35	193	63	35	144	42	14
55	0	15	237	40	15	230	224	64
57	17	17	66	228	241	3	191	1
0	6	218	48	205	254	60	183	27
52	35	191	5	209	63	23	237	0
43	205	33	205	36	40	23	82	183
0	107	26	49	205	21	23	40	237
56	11	32	35	174	205	129	35	66
62	62	1	24	33	209	79	68	205
56	118	6	42	254	36	237	77	27
57	215	0	205	0	42	121	225	33
42	215	237	35	32	226	24	209	225
50	1	176	35	8	191	10	237	9
42	64	205	205	205	1	245	176	229
51	0	245	90	43	12	205	209	205
57	17	33	32	15	0	132	193	217
42	247	205	254	205	9	33	197	33
55	36	43	56	195	241	241	213	42
0	205	15	32	36	254	254	5	14
59	107	205	32	24	58	35	197	64
0	11	90	205	210	32	32	33	17
57	62	32	8	254	4	9	32	28
52	118	245	34	41	54	205	0	0
0	215	205	205	202	0	183	25	25
40	215	42	18	245	24	33	229	62
49	1	10	35	33	2	205	213	0
42	25	241	205	254	54	18	1	190
38	0	254	35	57	53	35	29	32
55	205	29	15	202	24	195	0	226
0	107	32	58	125	73	0	237	225
38	11	107	240	32	254	32	184	205
49	201	205	191	205	32	254	225	35
49	62	82	254	188	32	33	1	15
0	118	36	41	35	33	192	64	205
59	215	205	40	205	205	205	0	106
38	1	205	5	32	201	35	9	32
55	22	32	205	32	37	15	209	195
46	0	58	76	183	205	6	193	0
38	17	240	32	237	90	15	16	32
39	80	191	24	66	32	33	235	
49	37	254	3	56	254	159	235	
42	205	59	205	183	59	192	24	
56	107	204	106	254	32	17	4	
0	11	77	32	59	5	32	225	
0	62	35	205	202	205	0	225	
52	118	254	226	5	154	25	225	
55	215	57	33	33	20	5	229	
0	215	204	24	205	24	40	6	
53	1	89	6	43	16	90	29	
0	63	35	205	32	205	62	54	
57	0	254	233	183	215	53	0	
52	205	53	36	237	35	190	43	
0	107	204	205	66	205	32	16	
40	11	215	18	56	35	244	251	
49	201	35	35	170	15	197	225	
42	62	254	195	254	237	229	193	
38	118	41	0	53	91	17	24	
55	215	40	32	202	214	12	164	
0	1	5	254	139	191	0	0	
16	12	205	30	32	42	183	33	
53	0	63	32	201	216	237	0	
38	17	35	79	254	191	82	192	
55	50	24	205	31	205	229	229	
57	36	68	95	32	93	205	34	
0	205	205	36	45	10	27	218	
52	107	54	205	205	24	33	191	
43	11	32	168	165	36	225	205	

BANK 1 DIRECTORY

```
=====
```

NO.	NAME	.EXT	ADDR	SIZE

A:	DIRECTORY	.DIR:	49152:	00704:
B:	PROGRAM NO1	.PRG:	49856:	00200:
C:	VARIABLES 1	.VAR:	50056:	00030:
D:	TOTALSYSTEM	.TOT:	50086:	01138:
E:	LINES 20-40	.PRG:	51224:	00068:
F:				
G:				
H:				
I:				
J:				
K:				
L:				
M:				
N:				
O:				
=====				
1:	SAVE	3:	PURGE	5:
2:	LOAD	4:	RECLAIM	6:
			BANK	8:
			QUIT	

```
=====
```

```
1:SAVE 3:PURGE 5:PACK 7:ROOM
```

```
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

```
=====
```

```
1:SAVE 3:PURGE 5:PACK 7:ROOM
```

```
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

```
=====
```

```
1:SAVE 3:PURGE 5:PACK 7:ROOM
```

```
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

```
=====
```

```
1:SAVE 3:PURGE 5:PACK 7:ROOM
```

```
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

```
=====
```

```
1:SAVE 3:PURGE 5:PACK 7:ROOM
```

```
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

```
=====
```

```
1:SAVE 3:PURGE 5:PACK 7:ROOM
```

```
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

Now let's answer '8' and return to BASIC. Type NEW to clear the system. Enter RAND USR 8192 and respond with '2' to load a file:

```
ENTER LETTER (A TO O) OF FILE:
"Z" WILL REDISPLAY DIRECTORY
```

Enter the file you wish to load (for example 'B'). If you need to look at the directory then the response 'Z' will redisplay it. The screen will blank momentarily as the program requested is loaded and then run automatically:

```
THIS IS LINE 1
THIS IS LINE 2
THIS IS LINE 3
T S HORIZONS ISSUE 11
THIS IS THE LAST LINE
```

A LIST produces the program:

```
10 REM TEST OF OPERATING SYSTEM
20 PRINT "THIS IS LINE 1"
30 PRINT "THIS IS LINE 2"
40 PRINT "THIS IS LINE 3"
50 LET VARIABLE=11
60 LET T$="T S HORIZONS"
70 PRINT T$;" ISSUE ";VARIABLE
80 PRINT "THIS IS THE LAST LINE"
```

Now delete it (NEW) and try another load (RAND USR 8192 followed by '2'). This time choose C -- the variables file. The only response on the screen is a 0/0 prompt and a list also produces 0/0. The variables are there however -- try for example PRINT T\$:

```
T S HORIZONS
```

Now enter NEW and RAND USR 8192 again. This time load the total system (TOTALSYSTEM.TOT). Note how the display file at the time of the save is reproduced -- not much use in this case. We'll use the program this time to test the reclaim option.

LIST produces the program. Suppose that lines 50 to 70 are to be deleted. Enter RAND USR 8192 and choose the response '4'. The first decision is to choose between clearing the variables or clearing all or part of the program:

RECLAIM PART OF SYSTEM

ENTER V TO CLEAR ALL VARIABLES
OR P TO CLEAR (PART OF) PROGRAM

Choose P and enter 50 and 70 in response to the prompts. (Incidentally, entering the same number for start and end will delete the single line.) The program returns you to the directory and the response '8' will show what's been done to the program. List it:

```
10 REM TEST OF OPERATING SYSTEM
20 PRINT "THIS IS LINE 1"
30 PRINT "THIS IS LINE 2"
40 PRINT "THIS IS LINE 3"
50 PRINT "THIS IS THE LAST LINE"
```

If you have a multi-banked system the BANK routine allows you to change banks and automatically brings up the directory of the required bank. Enter 0, 1, 2, or 3. The program masks the response to avoid any interference with the ZX81 operating system. Note the change in the LED status on the bank switching memory manager board.

Finally the purge and pack options -- the two go together. The purge command simply flags a file for purge -- it can later be unflagged if you change your mind. The pack command actually does the purging when repacking the files together. Choose option '3' to purge a file:

PURGE A FILE

THE FILE WILL BE FLAGGED AND
PURGED WHEN THE BANK IS REPACKED

PURGE (P) OR UNPURGE (U)?

Let's choose to purge 'C' -- the variables file. Enter P first and then C. The directory returns with the flag on the C file:

```
BANK 1 DIRECTORY
=====
NO.  NAME      .EXT  ADDR  SIZE
---  -
A:  DIRECTORY  .DIR:49152:00704:
B:  PROGRAM NO1.PRG:49856:00200:
C:  VARIABLES 1.VAR:50056:00030:P
D:  TOTALSYSTEM.TOT:50086:01138:
E:  LINES 20-40.PRG:51224:00068:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
=====
1:SAVE 3:PURGE 5:PACK 7:ROOM
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

The pack option will actually do the purge. So there's no need to remove a file until you're sure it's not needed or you need the space. The pack routine was the most difficult to write and consists of four sequential operations. The first (at 10075 for 20 bytes) scans the directory for the first purge flag. The second (at 10095 for 41 bytes) causes the flagged file to be overwritten as all additional files are moved down in memory. The third routine (at 10136 for 45 bytes) removes the directory entry as other entries are moved up in the display. The last entry is simply blanked. A return is now made to the first routine to search for the next flagged file. The fourth and last operation (at 10182 for 57 bytes) is done on the display file itself in slow mode. All addresses in the directory are recomputed (if you watch you will see this happen). Finally the new display file is saved and then redisplayed in fast mode. The directory now looks as follows:

BANK 1 DIRECTORY

```
=====
NO.  NAME      .EXT  ADDR  SIZE
---  -
A:  DIRECTORY  .DIR:49152:00704:
B:  PROGRAM NO1.PRG:49856:00200:
C:  TOTALSYSTEM.TOT:50056:01138:
D:  LINES 20-40.PRG:51194:00068:
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
=====
1:SAVE 3:PURGE 5:PACK 7:ROOM
2:LOAD 4:RECLAIM 6:BANK 8:QUIT
```

Next month this series will finish.

TSH

TS1000 SOFTWARE

PeakMOS- 64K Memory Operating System
allows several Programs to be resident in ram and transferred instantly to the normal 16K user space. Features directory, delete file, store file, recall file and more. 64K CASSETTE \$20

WordPro- Word Processor Prints upper and lower case (even on TS Printer). Features search, inverse video, block delete, selectable line length, page separation and more. Specify Parallel (TS Printer) or serial (BYTE BACK R6232) version. 16K CASSETTE \$15

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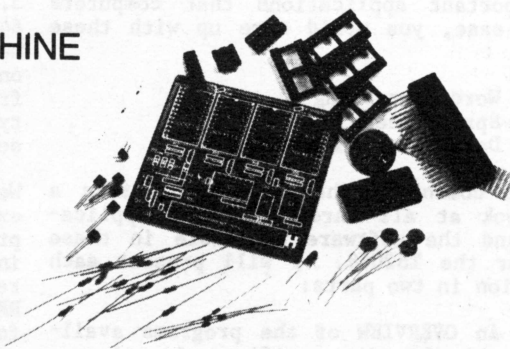
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(SYNC Magazine Mar/Apr 83)

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2068 Word-Processor

Software Evaluation

(Part I)

By Bill Ferrebee

All of us are aware of the many functional uses for computers. They help to simplify tasks, keep accurate records, speed up complex calculations, and let us play great games.

If you would take a survey of a large group of computer users, and ask them to name the most important applications that computers help to ease, you would come up with these three:

1. Word Processing
2. Spreadsheets
3. Data Base Management

Over the coming months, I plan to take a close look at all three of these applications, and the software available in these areas for the TS2068. I will present each application in two parts:

1. An OVERVIEW of the programs available for the specific application.
2. Short reviews of each program in that area.

If you have a program available for the TS2068 in the area of Word Processing, Spreadsheet, or Data Base Management, and would like to be included in the reviews, please feel free to provide me with a copy of the software. My address is:

Bill Ferrebee
MOUNTAINEER SOFTWARE
115 North 7th Avenue
Paden City, West Virginia 26159

This month, I will give an OVERVIEW of Word Processing programs available for the TS2068. By now, you should know what the main function of a Word Processor is..to enable you to generate manuscripts (letters, term papers, notes, etc.) with proper formatting, correct spelling, and without the need for "Whiteout."

Word Processing programs can enable you to type text, correct it on the screen BEFORE printing it, generate as many copies as you want, then save the text to tape or disk for future use. This can save you many hours of time, reams of paper, and possibly your sanity!

Before we talk about Word Processing (WP) programs for the TS2068, let's define a few specifics:

1. There are TWO types of printers utilized with the TS2068, the TS2040 Thermal Printer & Full-Sized printers such as the Epson FX-80. Some WP programs can utilize ONLY the 2040, some can utilize ONLY a Full-Sized printer, and some can be used with both.

2. Furthermore, currently there are TWO types of Printer Interfaces available for Full-Sized printers, the AERCO and the TASMAN. Again, some WP programs are formatted for only one interface, and some can use either. And remember some programs can use the 2040 only, and can not interface with a Full-Sized printer.

3. Some of these WP programs utilize a 64-column screen. I recommend that you use a monitor or a GOOD Black & White TV if you use one of these programs. Nothing can be more frustrating than to end up crossed-eyed after typing in a textfile that is a blur on the screen!

We do not have the time or the space to explain every feature available in these WP programs in detail. If you would like more information on what each feature does, I recommend you get a copy of the CONSUMER REPORTS "Computers at Home Guide". It sells for \$2.50 (plus \$1.00 postage and handling), and is available from:

Consumers Union
Bulk Sales Dept.
P.O. Box 1952
Marion, Ohio 43306

The checklist enclosed is one I generated to use during the evaluation of the various Word Processing programs available for the TS2068. It covers all of the basic features necessary for a good WP, and also shows you some of the "bells & whistles" that may be added to the programs. This in no way is the limit to the features available. There may be some other features that I have not covered that may be of interest to you. If you have any additional questions, please write me and I will be glad to find out what I can.

The chart that follows has the programs that I had available to me listed vertically, and the pertinent information marked horizontally. If there are any other Word Processing programs available for the TS2068 that I do not have listed, please provide me with them, and I will be glad to generate an Addendum in a future issue.

Next month, I will put each WP program through a sample textfile, and give you my review on each. In closing, I hope the chart I have compiled helps you to compare the features of each, and allows you to make a better choice, according to your needs.
TSH

PROGRAM NAME	MScript	TASWORD	T E X T W R I T E R			
		TWO	2000	2000+	+64	
Screen Size	64 x 22	64 x 22	32 x 21	32 x 21	64 x 21	
Txfile Size	18,400	19,200	24,000	24,000	14,400	
Printer(s)	Centronics	Both	2040	Centronics	Centronics	
Interface	AERCO	Tasman		AERCO	AERCO	
CURSOR BY:						
Letter	X	X	X	X	X	X
Word	X	X	X	X	X	X
Line	X	X	X	X	X	X
Screen	X	X	X	X	X	X
DELETE BY:						
Letter	X	X	X	X	X	X
Word	X	X	X	X	X	X
Line	X	X	X	X	X	X
MARGINS:						
Left	X	X	X	X	X	X
Right	X	X	X	X	X	X
Top	X	X	X	X	X	X
Bottom	X	X	X	X	X	X
BLOCK:						
Move	X	X	X	X	X	X
Copy	X	X	X	X	X	X
Delete	X	X	X	X	X	X
SEARCH &:						
Find	X	X	X	X	X	X
Replace	X	X	X	X	X	X
Wordwrap						
	X	X	X	X	X	X
R. Justify						
	X	X	X	X	X	X
Centering						
	X	X	X	X	X	X
Line Length						
	132	64	32	255	254	
Spacing						
	1,2,3+	1,2,3+	1,2	1,2	1,2	
Head/Foot						
	X	X	X	X	X	
Page Break						
	X	X	X	X	X	
Page Number						
	X	X	X	X	X	
Tutorial						
	X	X	X	X	X	

2068 WORD PROCESSOR EVALUATION CHECKLIST

PROGRAM NAME: _____
AUTHOR: _____
MANUFACTURER: _____
PRICE: \$ _____
SCREEN SIZE: _____ (cols) X _____ (rows)
TEXT FILE SIZE (MAX): _____ (chars)
PRINTER SUPPORT: _____ TS2040 _____ CENTRONICS _____ BOTH
INTERFACE SUPPORT: _____ AERCO _____ TASMAN _____ BOTH

EDITING CAPABILITIES
(CURSOR CONTROL)
BY LETTER: _____ BY WORD: _____ BY LINE: _____
BY PARAGRAPH: _____ BY SCREEN: _____ TO TOP/END: _____
(DELETE CONTROL)
BY LETTER: _____ BY WORD: _____ BY LINE: _____
BY PARAGRAPH: _____ BY SCREEN: _____ ENTIRE TEXT FILE: _____
BY LETTER: _____ OPEN LINE/REFORMAT: _____

FORMATTING
(MARGINS)
LEFT: _____ RIGHT: _____ TOP: _____ BOTTOM: _____
MOVE: _____ (BLOCK COMMANDS)
FIND: _____ COPY: _____ DELETE: _____
(SEARCH COMMANDS)
WORDWRAP: _____ REPLACE: _____
RIGHT JUSTIFY: _____ (EXTRA FEATURES)
HYPHENATION: _____
TABS: _____

PRINTER CONTROL
LINE LENGTH (MAX CHARS): _____ LINE SPACING: 1 _____ 2 _____ 3 _____
CENTERING: _____ PAGE NUMBERING: _____
HEADERS/FOOTERS: _____ PRINT PAUSE: _____
PAGE BREAKS: _____ (CHARACTER ENHANCEMENT)
ITALICS: _____ ENLARGED: _____ (FULL-SIZE PRINTERS)
DOUBLE STRIKE: _____ CONDENSED: _____ EMPHASIZED: _____
PROPORTIONAL: _____ SUB/SUPERScript: _____ UNDERLINE: _____
ELITE/PICA: _____ MIX OPTIONS: _____

HELPS
REFERENCE MANUAL: _____ REFERENCE CARD: _____
ON-SCREEN MENUS: _____ TUTORIAL: _____
POSITION DISPLAY: _____ SPACE LEFT INDICATOR: _____
"WHAT YOU SEE...": _____

MISCELLANEOUS
FILE MERGE: _____
COMPATIBLE PROGRAMS: _____

GRAFIST *Software Review* by Bill Ferree

AUTHOR: T.A. David

TYPE: Educational/Entertainment

MACHINE: TS2068

PRICE: \$19.95

AVAILABLE FROM: T.E.J. COMPUTER PRODUCTS
859 North Virgil Avenue
Los Angeles, CA 90029

Continuing in our series of reviews of "fine arts" type of T/S programs, this month we will take a look at GRAFIST. GRAFIST is a graphics program for the TS2068 that is very enjoyable to use.

GRAFIST contains the basic necessities of any good graphics program: Color selection, PEN (narrow) and BRUSH (wide) applicators, ability to combine graphics and text, circles, etc.

You can use either a joystick or the keyboard to DRAW on the screen. GRAFIST allows you to store up to 3 separate PAGES in memory, to recall later. If you are working on a picture, and want to experiment, you can send what is done so far into memory, and then proceed with your idea. If you don't like it, you can recall the original from memory, and continue.

Another feature available by having 3 page memory is the ability to animate. By quickly going from pages 1 through 3, you can do simple animation.

A feature of GRAFIST that is not graphic that I like is the ability to do scrolling text messages. You can design flashing banners, and by combining them with text, a very effective advertising message can be produced. I used this feature in the front window of the Video Rental store I manage when we had the Grand Opening at our new location.

You can also use the TITLE mode to design letterheads, logos, etc. You specify the character size, and spacing, and GRAFIST automatically designs it for you.

GRAFIST will accommodate either a TS2040 Thermal Printer, or most Centronics Dot-Matrix printers.

The documentation again is a fold-out sheet in the cassette box, but it does explain the features in a general way. My best advice is...have fun and EXPERIMENT!

Summing it up, GRAFIST is a very interesting piece of software, and if you like to play around with graphics, I feel it is a worthwhile investment.

TSH

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(Calculus)		
Fun & Games	n.a.	7.95
(Tic-Tac-Toe & Hangman)		

Note: 2068 versions are more than
just "uploads", but are remakes
containing full color and sound.

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T-S 2068 Product Review

by Tex Faucette

Timex Sinclair 2068 Guidebook,
T.S.S.

P.O.Box 15214

Red Bank, Tennessee 27415

I am somewhat at loss as to just how to assign a category to this cassette. Certainly it is a program, LOAD "" gets in into the T/S 2068, and menus take over from there. It is also a catalog of sorts, as it lists merchandise available for the T/S 2068. Egad, what a list! But it also possesses the traits of a magazine in that MONTHLY updates are promised!

I had been advised that this project was nearing the "production" stage, by the originator, Don Barnard, some time ago. Next the grapevine reported that Mr. Barnard was experiencing tape problems. In the press of other matters, I had almost forgotten the whole thing. Then the tape arrived. I was overwhelmed at the information it contained.

What Don Barnard and his associates have done is compile an extensive "resource list" for the T/S 2068. How extensive? Let me put it this way, if you are going to print out the whole listing on your Timex Printer, be sure to have a new roll of paper installed before you begin!

The tape for September 1984 is divided into four parts. Part 1 is dedicated to publications, hardware and supplies. (Yes, Dear Reader, T-S HORIZONS is included.) A total of 69 items are listed in this part. Each item occupies a "page" which gives brief description, price(s), vendor(s), and "Best Buy" source.

Menu options in each part include a list of vendors and ordering instructions.

Part 2 contains home and business software. I was amazed at the variety of programs in this category that are available for the 2068. Ninety programs are listed in this part, ranging from simple checkbook managers to quite sophisticated business programs such as payroll and income tax FOR BOTH THE U.S. and CANADA! A number of word processors are also included.

Part 3 contains entertainment software, with 75 listings. My comment here is that those who are really hooked on games should avoid this section. I can almost guarantee that reading it would be dangerous to their bank account. On the other hand, I spotted what appears to be some outstanding buys, especially among the "command cartridge" types listed.

Part 4 contains educational and utility software, with 74 listings. One thing that caught my eye was an I.Q. test said to contain a total of 100K (loaded in segments, just like the GUIDEBOOK), another (hackers take note!) was Hot-Z II. There were also some programs to convert T/S 1000 programs to the 2068.

While perusing these extensive listings, I paid special attention to the descriptions of those products with which I was familiar. Almost without exception I found the descriptions to be quite good considering their brevity.

As this tape was some time in reaching me, and an explanatory note enclosed by Don Barnard left a few loose ends dangling, I called Don in hopes of obtaining anything of a newsworthy nature. It turned into a lengthy and interesting conversation. Here are the facts, as I understood them:

Around October 1st Don will ship out "Membership Kits" describing benefits of membership in a new organization, the National T/S Users Network. (See address at head of this column, and get your request in early!) Member benefits at this time will include the GUIDEBOOK reviewed above with monthly updates, Monthly Newsletter, Discounts on products carried by T.S.S. and other benefits to be announced later. Membership is \$30 annually, and members, clubs, and dealers can earn a commission by signing up new members. Verrrrry Interesting! TSH

Editor's Note: Earlier this month we learned from Don Barnard of T.S. Services that the directory, formerly supplied to members on cassette tape, will be in printed form in the future, due to the volume of information contained. However, everything else included in the membership will remain the same. The price is also the same.

Software Review

PENETRATOR

by William Pierson

TYPE: Arcade-type, fast action graphics.

SYSTEM: TS2068, 48K RAM

FORMAT: Cassette/Cartridge

SUMMARY: Very challenging game with impressive graphics.

PRICE: \$19.95/cassette, \$34.95/cartridge

MANUFACTURER: Timex Computer Corp.
Waterbury, CT 06725

Penetrator is a fast action arcade-type game written for the Timex-Sinclair 2068. The game is packaged in a neatly styled box with excellent instructions. You may play this game using joysticks or the keyboard. Loading time for PENETRATOR was approximately 3½ minutes. It loaded the first time without any difficulties. After the first 30 seconds of loading an impressive title page is displayed which remains on the screen until the 'ENTER' key is pressed.

After the game has loaded the name of the game is displayed and shortly thereafter the game menu is displayed. There are several options. If no options are selected the game goes into a demonstration mode, which will show the first time user of the game the best strategy for 'blasting' the enemy missiles and radar stations. If the numeric keys 1 or 2 are pressed the game starts for real. Each player is given five ships to navigate through 4 different tunnels. Each tunnel has numerous radar stations and enemy missiles which have an annoying habit of zapping your ship at the wrong times (I guess this is the object of the game -- avoid the missiles). Upon successfully leaving one tunnel you enter another which is even harder. After you make it through the fourth tunnel you must destroy the ammo dump or be destroyed yourself. There are more tunnels after this but I have not made it that far yet. (If someone does please let me know what comes next!) There is a provision for keeping track of the top 5 scores; however, there is no provision for keeping track of the high score over a period of time. This is one of the drawbacks of this game. I like to make

backup copies of all my software in case one of the tapes goes bad. PENETRATOR does not allow you to save any of the variables or the basic game for that matter. So if for some reason the tape will not load some time after you bought it, I guess you are out of luck. There is no mention in the instructions of any way to make backups of this game, software protection I suppose.

Other instructions available from the menu include a Landscape Editor. I have tried this feature and found it to be very interesting. You can create easier and much harder landscapes for your ship to fly through. The number of enemy missiles and radar stations may be increased/decreased. Once you are satisfied with the landscape you may save this to tape, but only the landscape is saved, not the whole program. (The TS2068 saves screen information and data in a different manner than the TS1000 but that is the subject of another article.)

My favorite feature of the game is the T-training feature which allows you to practice going through the landscapes with an endless supply of ships to perfect your 'technique'. At this point I would like to discuss the use of joysticks with this game. I finally bought an ATARI type joystick to give me that arcade type feel for this game. I thought that using the keyboard would slow down my game considerably. Now several games later I have found that this is not the case. The joystick does help but once you master the keyboard high scores are very easy to obtain. I do not think that the joystick has the sensitivity required to play this game well. You can move through the landscapes faster but the fire button is somewhat sluggish. A problem not found using the keyboard. If you like joysticks you may not have this problem. Back to the practice mode, this is the only way I can get to the ammo dump and beyond. Only one player at a time may use this feature, but it does give you a good idea of how to manipulate your ship.

In summary, this is a highly entertaining game which is well worth the price of \$19.95 for cassette or \$34.95 for cartridge. It will provide many hours of enjoyment.

HARDWARE REVIEW
A & J Model 2000
Stringy Floppy Micro-drive
By W. Pierson

For those of you who own the TS2068 and bought it in anticipation of the micro-drives, the wait is over. Recently I went to a meeting of the Silicon Valley Sinclair/Timex Users Group in San Jose, California where this new piece of hardware was demonstrated.

The drive itself measures 6.5x4.5x3 inches, is finished in black matte and has a cable 18 inches long that plugs into the interface. The interface just plugs on to the back of the computer as would the printer. It has a connector on the back to allow for the attaching of the 2050 printer or modem. There are two connector ports for the drives (a maximum of two). Also on the top of the interface is a Cenronics Printer Interface plug. I was told that in the future that a CPI with cables and software would be available for a very competitive price. This seems to indicate the this system would end itself to word processing. I asked why only two drives could be coupled and was told that two would more than satisfy my needs.

I have not had the opportunity to test 'drive' it yet, but I did see it in operation. A & J claim that it has an 11K baud transfer rate. This is fast and I did see it load several programs in no time at all. This system works in conjunction with the cassette routines. All those extra commands, i.e., CAT or FORMAT are unnecessary. You simply execute a standard SAVE or LOAD command such as the following SAVE "@ 1, program". The '@' symbol tells the computer to save it to the stringy floppy. The '1' creates the first file. Files are saved sequentially so file 1 must exist before file 2. There are standard commands such as SAVE, LOAD, VERIFY and DIRECTORY. It seems very simple to use. The company has already sent drives to several vendors to start a software development program. So look for microdrive software soon.

I must say I was very impressed. The company is changing the memory location from RAM to an EPROM to save the computers memory. There was a small problem in loading some programs, but this should be fixed by the time any of the units are shipped. I think that this is one of the best third-party add-ons to come out on the market which can give you the speed and flexibility of a disk-drive system. The price from A & J Micro-drives is \$199.95 plus shipping. This includes the drive (extra power supply is not required), owners manual, and five micro-wafers. Other vendors are offering it at about the same price. (My order will be in the mail very soon!) A & J Micro-Drives address is 1050 "I" East Duane Avenue, Sunnyvale, California 94086, Tel: 408/732-9292.

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T / S 2 0 6 8

A coupon file that holds 100 coupon descriptions with up to 99 coupons in each. A shopping list section that is worth the price all by its self. And a storage list that holds 100 items and their locations.

While the other two files are great, the shopping list is the one that gets most of the work done. Like the other two, it has on screen edit, but it also will check up on the other files. It will tell you approx. how much money to take when you go to the store, then print out a shopping list on your 2040 that can hold up to 100 items with notation to tell you if you have a coupon for an item. It also makes a notation if you have the item stored someplace, + it gives you a place by each item to check off as you put it in the cart.

SEND check or money order for \$14.95 + \$1.50 P & H

To: H D SOFTWARE

1445 Oldfield Rd.

Decatur, GA 30030

USEFUL FUN EASY TO USE

2068

EDUCATIONAL SOFTWARE

EDUCATIONAL SOFTWARE
for the TS2068
By Bill Ferrebee

Program Names: "Kids on Keys"
"Facemaker"
"Kindercomp"

Age Group: 3 - 9 years

Manufacturer: SPINNAKER SOFTWARE

Price: \$16.95 each

Available From: GAMES TO LEARN BY
P.O. Box 78
18 Claire Hill Road
Collinsville, CT 06022

One of the great uses for computers is for LEARNING. Be it a new language, mathematical skills, or any variety of other areas, computers can play an important part in learning. And thanks to SPINNAKER SOFTWARE (and GAMES TO LEARN BY), the TS2068 can be a very useful learning tool for young children. Spinnaker is known world over for the great software they have developed for many home computers. And their best titles are now available for the TS2068.

"Kids on Keys" give children an early introduction to a computer keyboard. Through fun games, they are able to get comfortable with recognizing letters and numbers on a keyboard.

"Kindercomp" has a variety of activities, that allow children to be creative, with a simple "Etch-a-Skech" program, or master their recognition of shapes, with a matching game.

"Facemaker" lets children design their own "computer friend", and play various games with them. This program allows them to select the eyes, nose, hair, ears, and mouth, then make them smile, frown, cry, wink, or wiggle their ears.

I had seen the Commodore 64 versions of these programs before, and all three TS2068 versions are exact duplicates! If you have a young child all three programs would be very worthwhile. We all know that use of the computer is becoming more and more important in our children's life. The earlier we are able to introduce them to a computer, the better they will become.

More educational software is available from GAMES TO LEARN BY and next month I will review some British educational programs that run on the TS2068 WITHOUT modification. TSH

MASTERFILE

TS2068 SOFTWARE REVIEW
By Tex Faucette

MASTERFILE

(C) 1984 by Campbell Systems, 57 Traps Hill, Loughton, Essex, IG10 1TD, England

Distributed by RAMEX International, 48945 Van Dyke Road, Utica, Michigan 48087

MASTERFILE is a cute and powerful file program originally written for the Spectrum. This review covers Version 09, converted to run on the T/S 2068 without any type of "Spectrum emulator".

MASTERFILE is supplied on a cassette which is contained in an attractive book-size binder along with 28 pages of documentation. The program is recorded one time on one side, with the opposite side containing two associated utilities. Documentation contains instructions for preparing "working copies" of the main program and the utilities.

This version of MASTERFILE contains a sampling of a few of the many possible user-defined "report formats". These should be removed before SAVEing a "working copy" unless they happen to fit ones application. In such a case, the data only may be removed and the sample formats saved.

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Available for the ZX-81, TIMEX-1000/1500, TS-2068 and the 48K Spectrum (tape and extensive tutorial \$19.99). Specify model. Send check, money order to:

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On loading this version of MASTERFILE, one first encounters "MF notes" which delineates some of the changes made to allow the program to run on the T/S 2068. One of the changes

Bunny B	Warren Street
Canteen	-----

Likes Carrots and arithmetic, especially multiplication.
--

Showing Micro-print 42/51 and with 2 recs/page.

CAMPBELL SYSTEMS	57 Trap's Hill
Sales	Loughton
	Essex IG10 1TD
	England

Send SAE for full list of ZX Spectrum titles, which include graphic utilities PLAN and PRALMASTER.
--

Name and address labels, 3-up

Andrews K G No address has been provided, so we have used a Null Text filler instead.
--

Arbuthnot A 32 Harrow Lane Sudbury Middx

Bunny B Warren Street

SORTED BY NAME, 1 PER SCREEN	
Andrews K G	
ADDRESS... (not recorded)	
DEPT.....Personnel	
SALARY....£13025	
Press N to view successive records until blue 'no more' appears in line 22.	
Press Q to see full menu.	

SUMMARY SORTED BY DEPT Salary		
Matthews J	Admin	16700
Williams A	Admin	14505
Carruthers U	Admin	14235
Arbuthnot A	Admin	14995
Smithson P	Admin	12000
Ewing J R	Boss	88500
Bunny B	Canteen	---
Microdrive	Development	---
Programmer A	Development	18235

made was to strip off the microdrive instructions. This may prove to be a tactical error, as I have been informed that at least two parties are attempting to convert the Spectrum microdrives to operate on the 2068. Of course the instructions consume memory, but if the microdrives become popular on this side of the pond, they could be restored in "Version 09.xx" at some future date.

"MF notes" concludes with instructions to RUN to view notes again, otherwise LOAD "", and a STOP statement. Unfortunately, it don't work that way.

After several unsuccessful tries, I found it was necessary to use CLEAR 57327: LOAD "" (as specified on the cassette) to obtain a proper load. Once this obstacle was overcome, no further problems were encountered with operation of MASTERFILE. I was able to manipulate the sample data, print out the sample report formats on the T/S 2040 printer (see Fig. 1), and establish my own designs and formats.

Utilities included in the main program are worthy of special mention. Microprint (look at Fig. 1 again) is a licensed adaption of a program that is available from Myrmidon Software, P.O. Box 2, Tadworth, Surrey, KT20 7LU, England. Also included is a utility to draw lines and boxes, such as those shown in Fig. 1. Colors may be selected as desired to highlight the various displays. Data items may contain up to 128 characters, and up to 26 data items may be specified.

Four pages of the documentation concern use of the utilities supplied on the back side of the cassette. These utilities are provided to allow one to utilize what is referred to as "upmarket" (i.e., larger) printers with either Centronics or RS 232 interfaces, the TASMAN being one of those mentioned as compatible. Since I have not yet received the TASMAN, I am unable to comment on this portion of the documentation.

The remainder of the documentation is adequate for an experienced user of this type of programs, but might be difficult for a first-time user. It is my contention that when a program such as this is imported the documentation should be "Americanized". References to Spectrums, microdrives and such should be purged, and terminology should reflect our usage rather than that of our British cousins. I do not wish to sound insular, but I am a nut on documentation, and try to keep the first-time user in mind when I evaluate it.

Other than stated above, I found MASTERFILE to be a very good and powerful program with many interesting features. I hope to try it soon with the TASMAN interface and big printer and will mention the results in a review of the TASMAN products. TSH

Games from 'GAMES'

REVIEWS: "Deathchase" & "Frogger"
By Bill Ferrebee

PROGRAM NAME: Deathchase
AUTHOR: M. J. Estcourt
TYPE: Entertainment (Arcade Game)
MACHINE: 2068
PRICE: \$19.95

PROGRAM NAME: Frogger
TYPE: Entertainment (Arcade Game)
MACHINE: 2068
PRICE: \$19.95

BOTH AVAILABLE FROM: GAMES TO LEARN BY
P.O. Box 78
28 Clair Hill Road
Collinsville, CT 06022
(203)673-7089

Most of the writing I do for this magazine concerns the more serious aspects of the use of T/S: Telecommunications, Business Programs, Utilities, etc. I feel that both T/S computers can do ANYTHING and IBM or Apple can do, and for a lot less investment.

But, I finally will come out of the closet. I LOVE GAMES!!! There...I said it...and I feel much better, thank you.

I love playing games as much as the next guy. And thanks to a dealer, appropriately "GAMES TO LEARN BY", there are some fantastic ones available for the 2068, the T/S much better equipped for this genre of software.

With the H/R graphic and sound capabilities, I knew that games would be interesting programs on the 2068. But I had no idea that they would be THIS INTERESTING!!!

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SANTA CLARA, IN 47578

The first game I will tell you about is called DEATHCHASE. GAMES has exclusive distributorship of this program from Micromega in England. The 3-D graphics are nothing short of First-class, and the concept of the program is very intriguing. In fact, I played this game one afternoon for 3 hours straight!

Imagine you are sitting on a 26th century motorcycle. You are in the forest, patrolling for enemy cycles. Once you have them in range, you can fire deadly photon bolts to destroy them. Once you clear the sector, you are moved to night shift (some reward...midnights!).

You continue moving from day to night. The farthest I have been able to attain is 4 sectors out of 8. Don't worry, I'll keep trying!

DEATHCHASE rates a 10 in my book!

The other game I reviewed is one that should be very familiar to all of you...FROGGER. There has been a version done of this game for every computer from the IBM to the TRS-80 Pocket Computer. I guess that's because FROGGER is the best selling Video Game in the history of the business! Again, GAMES has exclusive rights to the 2068 version, along with many other Timex titles, in the U.S. This version is the original version, by Sega and Cornsoft.

Compared to the other versions of FROGGER I have played, short of the actual Arcade version, I feel this version for the 2068 tops the list! Every nuance is there, from the crocidles and otters, to the music! The top score is kept, and each screen gets increasingly harder. I heartily recommend FROGGER.

TSH

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Software Review **MUSIC LIBRARY** by Dennis J. Parker

Program: Music Library
System Type: Business/Home
ROM/RAM: 8K/16K
Written In: BASIC, listable
By: Kendric C. Smith
From: WMJ Data Systems
#4 Butterfly Drive
Hauppauge, New York 11788
Price (Manual TS/1000, \$14
and Tape): 2068, \$16

Music Library is a data base management program that provides a convenient format for organizing your music collection. It allows you to store three lines of information (each 32 characters wide) on 100 or more items of music. You decide how to use the three lines, such as name of artist on line 1, album name on line 2, and favorite selections on line 3. I used the TS/1000 version. The 2068 version enlarges the memory to 300 items. The program is menu-driven, providing you with options to enter, correct, delete, and save data, or print out to the screen or printer.

Two features of particular note are the routines that alphabetize (missing from so many similar programs); and OMNISEARCH, which will search for any word string in any line. Also convenient is the option to exit the data input sequence at any time.

Music Library can be easily modified to adapt to individual needs. This is important because the trade-offs selected between

user-friendly features, space available for data, and processing speed, vary from person to person. The manual is well written in a full-size page format and gives numerous tips on modifying the program (which is also listed). I was able to increase the number of albums from just over 100 to 175 by deleting the third line, re-dimensioning, and cramming data into the trailing spaces of the remaining two lines. The search routine is slow but complete. I could speed it up by having it search only the first line's word string. But I like OMNISEARCH enough to tolerate the delay. It's great to be able to not only ask for a list of all albums by a particular artist, but to also be able to list the various artists who have recorded the same "classic", such as "Autumn Leaves" or "Mack the Knife".

As you make modifications to the basic program, a simple GOTO statement will tell you how much usable memory is available for data. The manual is so friendly and detailed, that it becomes nearly a tutorial on programming in BASIC, with each routine explained, along with suggestions on possible modifications.

I recommend Music Library for those of you like me who have so many record albums and tapes scattered about, that you don't know what you have or where to find it. In fact, the program could be easily adapted to any type of collection, such as photo prints and slides.
TSH

Hardware Review **ROMPAK** by John Marion

ITEM: ROMPAK SOFTWARE CARTRIDGE
FROM: ROMPAK
8206 Blackburn Avenue
Los Angeles, California 90048

PRICE: Deluxe Cartridge: \$16.95
Cartridge Kit: \$ 9.95

The Rompak cartridge is something that all Timex computer users can appreciate. It can instantly load programs, such as games or utilities, into memory. The cartridge is memory mapped in the unused 8 to 16k block of memory, and it has an expansion connector out the back, so it can be used with the T/S printer or ram pack. The heart of the Rompak board, is a 74138 IC, which is used to decode the memory for the eeprom. The board will accept three types of eeproms; first, the 2764-8k eeprom; second, the 2732-4k eeprom; and

third, the 2716-2k eeprom. I also found it will accept roms like the one used in the ZX80, and ZX81.

If you plan to use more than one eeprom in your Rompak, then I suggest you purchase the ZIF socket, available from Rompak, because it will allow you to quickly and safely change eeproms. Although, the ZIF socket is an excellent addition, it has a tendency to fall out of the on board socket. To cure this, the manufacturer should have permanently attached it to the Rompak board.

Over all, the Rompak board is well built and is an excellent buy for your money, and if you have an eeprom programmer, it is even better, because you can write your favorite programs on eeproms and have them instantly load with one simple command!

BOOK REVIEW
By Kent R. Mason

More Uses for Your Timex/Sinclair 1000: Astronomy On Your Computer, by Eric Burgess, F.R.A.S. and Howard Burgess. Sybex Inc., 176pp., \$8.95.

If the recent flights of the space shuttle have sparked your interest in astronomy then this might be the book you've been waiting for. More Uses for Your Timex/Sinclair 1000: Astronomy On Your Computer, is a collection of twenty programs dealing with amateur astronomy. The programs are quite varied, ranging from the EASTR program which calculates the date of Easter Sunday for any year, to the CONST program which randomly selects a constellation for display and gives you a chance to identify it. All the programs in this book require a TS1000 or a ZX81 with 16K RAM.

The book is divided into four sections. The first section deals with time and dates and the conversions between them. The second section is comprised of four programs dealing with the moon. The third section will help you learn your way around the planets and the fourth section contains three general purpose programs. I've entered three or four programs and all have performed as expected. The listings are lengthy but appear to be accurate. All the programs include a sample display so it is easy to check your program for accuracy.

Of the programs that I have used, the SKYPT program has been the most rewarding. SKYPT (for Skyplot) plots the position of the visible planets, the sun, and the moon for any date, time, and location of your choice. When you RUN the program the prompts will ask you for the necessary information such as the date, the time, the time zone and whether or not you wish to change the longitude and latitude. (The authors do note that this program should not be expected to run accurately at latitudes exceeding 85 degrees north and south.)

The following prompt will then ask you to choose a horizon centered on north, south, east or west. Now the fun begins! At the bottom of your screen the program generates an artificial horizon that makes excellent use of the Sinclair graphics. Next the program begins to plot the sun, the moon, and the planets. The planets are identified by various letters of the alphabet and other characters. (See figure 1.) On the right of the display the elevation in degrees is shown and at the top of your screen the date, the local time, and the location is printed. Overall the screen display is quite pleasing and easy to understand. If you have a Sinclair or Timex printer the screen can be copied (using the Sinclair COPY command) by answering the prompt at the bottom of the screen. (See figure 2.) The SKYPT program alone is well worth the price of the book.

ASTRONOMY ON YOUR COMPUTER

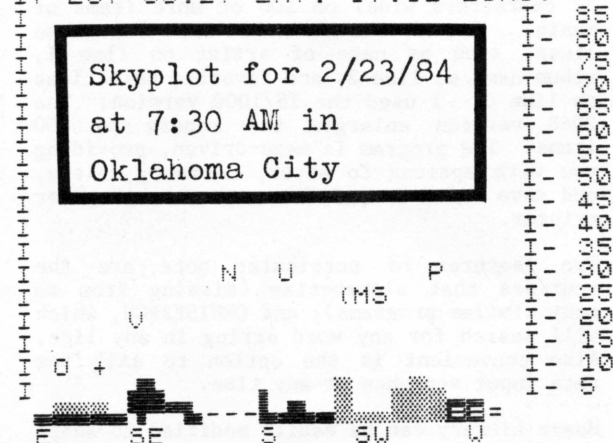
PLANETS ETC. ARE
IDENTIFIED AS...

SUN..... O
MERCURY... +
VENUS..... V
MARS..... M
JUPITER... J
SATURN.... S
URANUS.... U
NEPTUNE... N
PLUTO..... P

FIGURE 1
MOON
NEAR FULL O
BEFORE FULL)
AFTER FULL (

FIGURE 2

SKYLOT - 1984 2 23 AT 7.5 LMT
17 LST 35.27 LAT. 97.32 LONG.



In general the programs are aimed at two types of astronomers, armchair astronomers and amateur astronomers. Armchair astronomers being those without telescopes and amateur astronomers being those who have telescopes. For amateur astronomers some of the programs contain information that will be useful for the setting of circles on equatorially mounted telescopes.

The authors point out that some of the programs that complement each other can be merged, the RADEM program and the RADEC are good examples. The RADEM program finds the right ascension and declination (position) of the moon and the RADEC program finds the right ascension and declination for all of the planets. The authors suggest that the program lines in the RADEM program be keyed in at higher line numbers and used as a subroutine for the RADEC program. Although I have not tried this I believe it should work as neither one of the program listings is excessively long.

If you have more than a passing interest in astronomy or if you are looking for a new way to use your TS1000 or ZX81, then this is a book to buy. The programs in Astronomy On Your Computer will give you many hours of pleasure under the summer skies.

PRODUCT REVIEW
By Robert Woish

BLIPPO SOUND EFFECTS GENERATOR
(From Zebra Systems, Inc., \$19.95)

The Blippo sound effects generator is a low-cost add-on module for the ZX81 or TS1000. It connects through the computer's rear expansion port, and as all sensible peripherals, provides another expansion port at its rear. The module takes its power from the computer. Output is through a standard mini phone jack, which accepts standard earphone or mini speaker plugs. A speaker module with mating plug is available for \$5.00 and comes in a neat little plastic enclosure. A volume control is provided on the Blippo module.

There are, strictly speaking 15 output tones available from the Blippo. How you combine these and how you time them determine the number of total sound effects you can derive. Each tone is implemented by poking a value between 1 and 15 to location 9000. Location 9000 is chosen because in the computer's memory map it is not used either by the operating system or RAM. Poking these values gives you the discrete tones. Poking a 0 to location 9000 turns the sound off. You can also control the sound by using either fast or slow modes on the ZX or TS. For example, if you use a FOR/NEXT loopand sequentially poke the values 12-4 into location 9000 in slow mode, it produces a very musical sounding arpeggio. I use this type of sound for announcing a new spaceship, a victory, a move in the right direction, etc. If you use the same routine in fast mode, however, you get a single blast from an alien photon laser. Nesting this same routine in another loop will give you several very believable bursts from your laser. Reversing the same loop (poking 4-12) in either mode results in a sound of similar quality but opposing feeling. Adding delay loops alters this same routine still further. Keep in mind that these are all variations on one routine. Along with the instructions, which were adequate, came sample routines for eight different sound effects ranging from a telephone ringing to a police horn. Any of these routines (or any others you create) can be called from within a program as a subroutine and used as many times as you like. The sound effects possible with the Blippo module are varied, although not all encompassing. If you have any notions of multi-channel music synthesis or 21st-century wave-shaping, you're looking for a more sophisticated (and much more expensive) unit. But if your ZX or TS exhibits the personality mine does, it cries out for the added dimension of audio communications with the outside world. I've found that one of my favorite uses for the Blippo is 'Blippizing' my favorite programs and adding audio prompts to existing utility and home budget programs. It's like hearing a mutespeak. I wouldn't be without mine.

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BUDGET ROBOTICS & COMPUTING
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We purchased the rights to manufacture and sell the Computer Continuum Buffered Buss Development Board a few months ago. This expansion Buffered Buss board is approximately 6 1/4 by 8 1/4 inches in size, double sided with plated through holes. It has seven expansion connection points. One is a duplicate of the connector at the rear of the computer but with gold plated fingers. Four points allow the addition of 23/46 .156" edge card connectors and two are for the addition of 23/46 .100" edgcard connectors. It is available in bare board version with complete documentation, Parts list, and a 90 degree connector for connection to the computer's rear connector. The board is compatible with the Sinclair and Timex/Sinclair ZX80, ZX81, TS1000 and TS1500 computers.

We also have available the input/output board originally sold by ZOMEX as the RX81. I can supply this circuit board in bare board version complete with documentation and Parts list. Each Parallel I/O RX81 Provides both eight latched outputs (each capable of driving an LED, transistor switch and relay) and eight inputs (each capable of reading mechanical switches or TTL status) at machine code speed. The RX81 (approximately 2 3/8 by 3 inches, double sided, plated through) can either be plugged directly into the computer, or if more than one peripheral is desired, two or more RX81 boards can be plugged into the expansion Buffered Buss board. The RX81 works with the TS2068 computer also.

The above boards are the same described in my robot and home control articles (Jul-Aug 83 and Jan-Feb 84 SYNC magazine). A copy of an unpublished article describing a simple and inexpensive optical encoder input Project is included with the RX81 documentation. M.E.N.R.V., the robot described in the SYNC article, won the Golden Droid award at the First International Personal Robot Congress in April, for the Most Entertaining. I have written a book describing the above Projects Plus more which will be published by TAB Books in 1985. At that time, these two boards will also be offered in kit form. Also, this inexpensive computer expansion line will be enlarged with more bare boards for use in conjunction with the buss and I/O boards. For example, digital voice, stepper motor driver, 8255 IC based I/O and optical encoder boards will be offered.

Circuit board Prices are as follows: all Postpaid (U.S. and Canada).

Expansion Buffered Buss bare board	\$40.00 ea.
RX81 I/O bare board	\$10.00 ea.
two RX81s for	\$18.00

Steve Telford
Steve Telford
Budget Robotics & Computing

T-S NEWS

ITEM: Clive Sinclair was in the news in America recently but not in the computer field. On January 10 the Cable News Network reported on the unveiling of the Sinclair C-5 (see drawing.) The C-5 is said to be the first model of a complete line of electric vehicles. Top speed is about 15 mph and it can go about 20 miles before recharging. Intended to be used for shopping, commuting, and transportation for teenagers. The cost is about \$500.

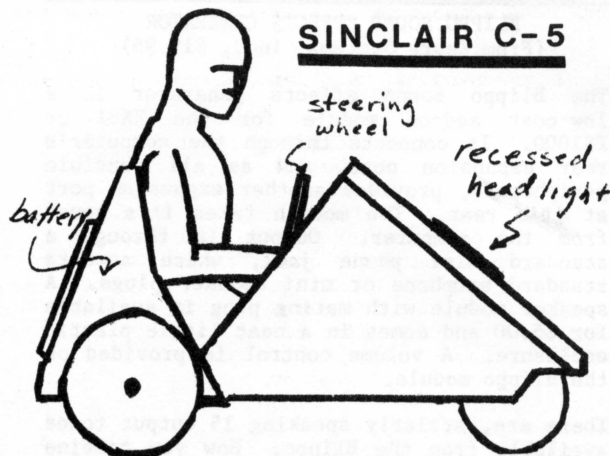
ITEM: What else has Clive Sinclair been doing? Now that the QL is off to its somewhat rocky start, Sinclair Research is expending effort in some other computer-related areas.

- English users are currently debating the merits of the new Spectrum Plus. Inside it is the 48K Spectrum (upon which the TS2068 is based), but the keyboard is improved (the Spectrum's keyboard features rubber pads very similar to the TS1500 while the Spectrum Plus has a QL-like keyboard). Also featured is a rest switch, two pop-up feet and six home software programs. Separate keys have been provided for some punctuation marks and the cursor controls and a space is provided, the placement of the new punctuation keys looks a little silly. The consensus seems to be that the change is not worth the added price.

- Sinclair Super BASIC and QDOS (both from the QL) are features in a new computer workstation from ICL, a British company. The product called the OPD (One Per Desk) features two Sinclair microdrives and three Sinclair chips. The built in telephone is linked to the computer and the OPD takes the place of a modem, answering machine, and more.

ITEM: We recently received a sample package from the Elect Christian Computer Club (or E3C). The package included the December issue of their monthly newsletter, a bumper sticker, and a membership form. Their 12-page newsletter included discussions of the use of computers in the church, general computer information, as well as an opinion poll concerning many contemporary Christian issues. A one-year membership is \$8.00 (\$5 if you also send a Christian and/or computer-related poem, story, program, etc.) Foreign orders, add \$5. The address is Elect Christian Computer Club, P.O. Box 31022, Chicago, IL 60631-002. Write for a sample (you might include a couple stamps to cover postage).

SINCLAIR C-5



ITEM: Hi-res for ZX81/TS1000 via software. ONLY \$10. Sync Artist 1.3 is a machine code graphics program that gives 256x192 resolution, is menu-driven and cursor controlled. John Brohman of the Vancouver group compares it to Apple's Macintosh. \$10 from Callisto Software, 924-2nd Street East, Saskatoon, Saskatchewan, Canada S7H 1R1. 16K required.

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To order send \$19.95 plus \$2.00 P&H for cassette and manual: Tom E. Cole, 1314 Speight #15, Waco, TX 76706. Texans add local tax.

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INDEXATION OF VOLUME I, NOS. 1-10
(November 83 to December 84)

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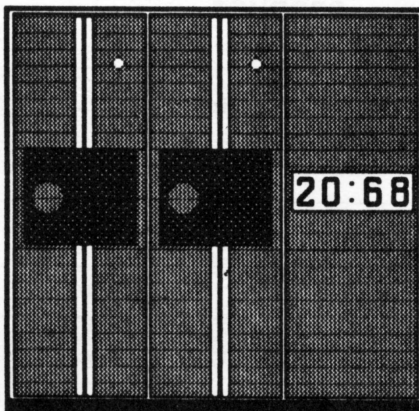
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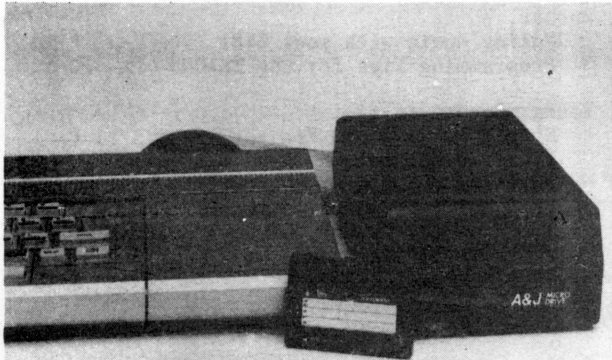
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